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TELEGRAPHIC ADDRESS—LANCET WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

No. XIV. of Vol. II., 1919.
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SURGEON, BELGRAVE HOSPITAL FOR CHILDREN; DEMONSTRATOR OF ANATOMY, ST. THOMAS'S HOSPITAL; ASSISTANT SURGEON TO ST. MARK'S HOSPITAL FOR DISEASES OF RECTUM AND TO MILDMAY MISSION HOSPITAL.

FOR some time past I have been much interested in the subject of cardiac massage as a means of resuscitation in cases of apparent sudden death, and especially when the result of an overdose of an anæsthetic, and in the curious and varied effects which may follow such a procedure.

Not very many years ago if one had ventured to suggest massaging the heart one would have been considered extremely bold, since it was then held that to touch the heart meant instant death, let alone manipulation of this organ; but now we know the heart is much more tolerant than was originally supposed, and already several successful cases of suture of the heart for traumatic rupture have been put on record. Again, thanks chiefly to the researches of Carrel, many operations upon the heart and the great vessels have been devised and have been successfully performed on dogs.

The Experimental Basis of Heart Massage.

Cardiac massage as a means of resuscitation is based upon a series of physiological experiments, the first recorded cases being those of Schiff, who in 1874 succeeded in restoring cardiac pulsation by rhythmical compression of the ventricles with the hand. Defibrinated blood was at first injected, but later on various artificial fluids, resembling blood in their dissolved salts and specific gravity, gave better results. Finally, the addition of 1 per cent. grape sugar yielded the best results. Schiff's earliest experiments were made upon hearts retained in the body, but later hearts removed from the body, even for a long time and even after being frozen, were resuscitated by filling the heart with fluid and the application of direct massage. He proved that it was possible to re-establish cardiac pulsation and respiratory movement even up to 11½ minutes after the heart had stopped in dogs killed by an overdose of chloroform. His method of procedure was to open the thorax at the same time that air was insufflated into the lungs, and then rhythmically to compress the heart at the same time as the abdominal aorta was compressed for the purpose of keeping the brain well supplied with blood. Most of the dogs, however, died within a few hours without showing any signs of voluntary movement, and in some cases after the onset of convulsions. In 1889 Prus, of Lemberg, experimented upon 100 dogs, 21 of which were killed with chloroform. Heart massage, together with artificial respiration, was started in from 55 seconds to 1 hour after the heart had stopped. In 16 of these cases normal cardiac action was restored in times varying from 30 seconds to 20 minutes. All these animals were killed at the end of the experiment excepting one, in which case massage was commenced four minutes after the heart had stopped beating, and normal pulsation did not return until massage had been continued for five minutes. This animal recovered completely. 44 dogs were asphyxiated and only 31 were restored to life by cardiac massage. Similarly, 35 were killed by electricity and only 5 were resuscitated.

Velich, in 1903, placed a heart removed from a dog's body in snow for six hours and was able to re-establish contractions in both auricle and ventricle by massage. In another heart, after lying in snow for 18 hours and after being frozen in salt solution for two hours, contractions of the auricle and slight contractions of the ventricle were obtained.

In 1903 Bourcart succeeded in resuscitating a dog whose heart had stopped beating under chloroform by the subdiaphragmatic method of cardiac massage. Normal cardiac action was restored after three minutes of massage, and the animal recovered completely.

Fibrillary Twitchings.

Experimental research has shown that when fibrillary twitchings of the heart occur as the result of massage, instead of normal contractions, it is very improbable that a successful issue will be obtained. The probability of these twitchings occurring is to a large extent proportionate to the length of time that is allowed to elapse between the stoppage of the heart and the commencement of massage. In one or two of the cases which have come under my own observation, these fibrillary twitchings have been felt, and no further amount of massage appeared to have the slightest effect in restoring normal cardiac contractions.

Theories in Cardiac Massage.

With regard to the way in which cardiac massage acts: D'Halluin believes that by massage the distended heart is emptied of blood, and an artificial circulation is produced through the coronary arteries. This has the effect of restoring rhythmical contraction of the heart, which in turn excites the nerve-centres, restoring respiratory movements. It should be remembered, however, that the heart is not always distended in such circumstances, and that this organ can often be felt as a flabby soft sac, resting upon the diaphragm, in certain cases where massage is being performed by the subdiaphragmatic route. It seems to me quite reasonable to suppose that this is the class of case in which cardiac massage would have to be persevered with for a considerable time before normal spontaneous pulsations are restored, since, in order to re-establish a satisfactory coronary circulation, blood must be allowed to accumulate in the cardiac cavities in sufficient quantities to allow of it entering the coronary arteries when the heart is compressed. The aspirating effect of the recoil of the heart wall, after compression, in all probability determines a flow of blood from the large veins into the auricles, and so into the ventricles. Further evidence in support of the theory that the re-establishment of coronary circulation is the important factor in the restoration of the heart beat, is brought forward by Spina, of Prague, who injected into an artery in the direction of the heart a large quantity of normal saline solution (some 200 c.cm., in a dog), at a temperature of from 35°–40° C. The injected fluid closes the aortic valves and enters the coronary arteries, and so stimulates the heart muscle itself. Spina was thus able to restore the heart beat in many animals in which the brain and cord had been destroyed, and also in animals in which the heart's action had been arrested by poisoning with alcohol, nicotine, and other narcotics. Experiments have also been devised which show that, by injection of certain substances into the coronary arteries of animals, pulsation may be restored in hearts which have ceased to beat for some hours or even days, and one case is recorded of a child, aged 3 months, who died from double pneumonia, in whom the heart's action was revived 20 hours after death and continued to beat for more than an hour. The solution employed in this case consisted of a mixture of sodium, potassium and calcium chloride, and sodium bicarbonate in the proportions in which they exist in the blood, together with a small amount of dextrose. Crile, in his book on "Blood-Pressure in Surgery," lays stress on the fact that in order to restore the apparently dead not only must the heart be made to beat, but the respiration must be re-established and the vaso-motor centres stimulated into renewed activity. Hence he says that with cardiac massage we must combine artificial respiration and also find means to restore vaso-motor activity. The latter essential may be brought about by intravenous infusion of adrenalin in salt solution, combined with Crile's pneumatic rubber suit, to which reference will be made again later on.

Effect of Adrenalin on the Heart.

Experimental evidence goes to prove that the action of suprarenal extract on the heart is not brought about through the intervention of the central nervous system. Hedson showed that in an isolated cat's heart perfusion of suprarenal extract through the coronary arteries produced an increased tone in the cardiac contractions, and that this effect lasted several hours.

Gottlieb showed that if the heart of an animal were stopped by the administration of chloral hydrate its pulsations could be restored by injections of suprarenal extract, even after it had ceased beating for five minutes, provided that at the same time rhythmical compression of the thorax

was maintained. Cleghorn demonstrated that a strong solution of suprarenal extract (about 10 per cent. in saline solution), if perfused through the coronary arteries of the dog's heart would produce fibrillary twitchings of the apex of the heart, after several very large contractions. It has also been shown by Crile that adrenalin injected directly into the chamber of the heart or into its wall caused fibrillary contractions, after which the heart could not be resuscitated. Crile mentions the case of a patient in whom, by means of combined artificial respiration, rhythmical pressure of the thorax over the heart, and intravenous infusion with adrenalin in normal saline, the heart, which had stopped beating for 9 minutes, was made to beat for 32 minutes. I have already referred to the great importance which Crile attaches to means which are directed towards the restoration of vaso-motor activity as a valuable accessory to cardiac massage. We have seen that to a large extent this may be brought about by the injection of suprarenal extract, but Crile at the same time lays great stress upon methods for increasing the blood pressure by external compression. He has proved by experiments upon animals that, by external pressure, a rise of blood pressure can be obtained proportionate to the force and to the area of compression. This result may be brought about by bandaging the extremities, or by pressure on the abdominal aorta, or by employing Crile's pneumatic rubber suit, which is composed of a double layer of specially prepared rubber which, when inflated, exerts uniform pressure on the surface, so producing an artificial peripheral resistance. It is constructed in such a manner that one or more limbs, or the abdomen, may separately, or in any combination, be subjected to pressure by inflating the suit with a bicycle pump. Crile has found this apparatus extremely useful in operations attended by shock or collapse, and in certain cases where such a condition was expected to ensue the suit has been placed in position prior to the operation.

Finally, I should mention that Crile has restored cardiac pulsation experimentally, in dogs killed by chloroform, by the forcible injection of a solution of adrenalin into the carotid artery in the direction of the heart. The theory is that the fluid so injected enters the coronary arteries and, by its direct stimulating effect upon the vessel walls, re-establishes the coronary circulation, which in its turn determines cardiac contraction.

Methods Employed.

A brief description of the various methods and routes employed in the operation of heart massage may not be out of place.

1. *The subdiaphragmatic route.*—This is probably the best of the methods at present adopted, and is especially applicable in cases where the abdominal cavity is already open. A hand is inserted between the diaphragm and left lobe of the liver. The heart is defined and may be pressed against the posterior thoracic wall, external counter-pressure being maintained with the other hand against the ribs on the left side; or else the heart may be kneaded through the diaphragm by the closed fist. In cases of cardiac failure where the abdominal cavity is not already opened a rapid vertical incision through the upper part of the left rectus, splitting the muscle, or if preferred a mid-line incision may be employed. The opening in the abdominal wall should be large enough to admit the hand comfortably, since massaging the heart is often a very tiring performance, and the difficulties and discomforts of the operator are greatly increased by the edges of a small incision constricting the wrist or forearm. Another incision that has been advocated is a subcostal one, parallel to the left costal margin. In such an operation there will be no troublesome hæmorrhage from the abdominal wall, at any rate until cardiac action and the circulation have been revived. It is an astonishing fact that, even without preliminary cleansing of the patient's skin or of the operator's hand, the abdominal wound often heals by first intention. In children it is sometimes possible to perform cardiac massage by manipulation below the costal margin, without any preliminary incision.

The subdiaphragmatic route is the only one that I have had personal experience with. I have had occasion to employ this method in some 14-16 cases, with a successful result in 3, not including several cases of temporary stoppage of the heart in which the abdominal cavity was already open, and immediate massage quickly restored pulsation.

Of the three cases referred to, one was in a patient, aged 28, suffering from a "ruptured tubal gestation," and who had lost a very large quantity of blood. Intravenous infusion with a mixture of normal saline solution 2 pints containing 2 drachms of a 1 in 1000 solution of adrenalin chloride, had been employed from the commencement of the operation. When the operation was almost finished the heart and respiration ceased. Artificial respiration was started and the usual hypodermic injections of ether, strychnine, &c., were given, but without avail. After a very short period of massage a contraction of the heart was felt, but regular pulsation was not obtained until about one minute after massage had been commenced. After two or three heart beats a spontaneous inspiration was taken, and normal respiration was soon established, and I am glad to say the result was permanently successful.

The second case was that of a small child suffering from empyema. The heart and respiration stopped during induction of anæsthesia by chloroform; artificial respiration and the ordinary means for resuscitation were employed. After two minutes, since no pulse could be felt, the abdomen was rapidly opened and cardiac massage started. Within a very short time a contraction of the heart was felt, and spontaneous pulsation quickly followed. The abdominal wound was closed in layers and healed by first intention, in spite of the fact that no preliminary sterilisation of the patient's skin or operator's hand was carried out. Unfortunately, the child died a fortnight later from broncho-pneumonia.

In the third case the patient, a soldier, had been anæsthetised with chloroform and ether, and at the beginning of the operation, scraping a sinus in an amputation stump, the patient stopped breathing and no pulse could be felt. No result followed from artificial respiration and a hypodermic injection of strychnine. The abdomen was rapidly opened by means of an incision through the left rectus muscle, and cardiac massage commenced. After about 30 seconds a contraction of the heart was felt, and soon rhythmical contractions were established. Artificial respiration was continued, but spontaneous breathing occurred within a short time after the re-establishment of cardiac pulsation. Recovery was complete. In this case massage was commenced about two minutes after the heart had ceased to beat.

In contrast with these three cases, a boy undergoing a lengthy operation for extensive tuberculous glands of the neck suddenly collapsed, stopped breathing, and his heart stopped beating after four hours of chloroform and ether anæsthesia. Artificial respiration and various other means were adopted to revive the patient. After several minutes the abdomen was opened and subdiaphragmatic massage commenced. Within a very short time the heart began to beat again. Artificial respiration was still continued, but spontaneous breathing quickly followed the restoration of the heart beat. The abdominal wound was closed and the patient hurried back to bed. The pulse at this time was of good volume and the respiratory interchange satisfactory, although breathing was rather sighing in character. The corneal reflex soon returned. The patient lived for 22 hours, but never regained consciousness nor performed any voluntary movement.

Post mortem.—A large number of breaking-down tuberculous, mediastinal, and mesenteric glands were found, but otherwise nothing abnormal.

2. *The transdiaphragmatic route.*—After opening the abdomen an oblique incision is made through the diaphragm from right to left and from before backwards, of sufficient length to allow two or three fingers to be inserted. As far as can be ascertained no success has followed this method of cardiac massage, which is not to be recommended owing to the extra time taken in exposing and incising the diaphragm.

3. *The thoracic route.*—This route was the first to be employed in order to gain access to the heart for purposes of massage. A rectangular flap containing two or three of the left costal cartilages and ribs, and in some cases a portion of the sternum, is reflected, and the pericardium is exposed. The pericardium may or may not be opened, and massage is easily performed. There is apparently no advantage gained by opening the pericardium, and the risk of septic infection goes a long way to negative such a procedure in these cases. One successful result is recorded by Igelsrud[1] after employing this method, and in this case other means had been adopted for some three or four minutes without avail; the third and fourth ribs were resected on the left side and the pericardium exposed and incised. After massage for one minute the heart commenced to beat feebly, and at the end of another minute rhythmical contractions were obtained.

Three other cases are recorded in which this route was used with temporary success. In one of these, described by

Maag,[2] the heart responded to massage by beating for eight hours, and spontaneous respiration was re-established for a time, but the patient never recovered consciousness. In another case the operation was for suture of a bullet wound in the heart wall. Contractions were successfully obtained by cardiac massage and the patient lived for five hours, in spite of the fact that the bullet was afterwards found to have traversed the diaphragm, stomach, and liver.

The third case, described by Sick,[3] was that of a boy, aged 15, suffering from tuberculous peritonitis. Towards the end of the operation the patient struggled; more chloroform was given, when the heart and respiration suddenly failed. Artificial respiration and compression of the chest wall were tried with very temporary success. Some 45 minutes after the heart had first stopped massage by the thoracic route was performed. In 15 minutes the heart commenced to beat, and spontaneous breathing was restored. Massage was continued for another 15 minutes until good firm cardiac contractions occurred. The patient recovered consciousness some two hours later and lived for 24 hours. There is no record as to whether the pericardium was opened or not. Post mortem signs of pericarditis were present.

This is a very instructive case, showing (1) the length of time that the heart may be inactive and yet may be revived by appropriate massage; (2) the long time that massage may have to be persevered with before the heart beat is restored; (3) the recovery of consciousness after a long period of apparent death.

Crile's method.—This method has already been considered more or less in detail, and consists essentially of a combination of cardiac massage or rhythmical compression on the chest wall over the heart, with intravenous infusion of normal saline solution containing adrenalin, and the application of the pneumatic suit, in order to raise the blood pressure. At the same time means are taken to produce artificial respiration. The strength of adrenalin employed varies from 1 in 25,000 to 1 in 50,000. The pneumatic suit is kept on for some time after normal breathing and the pulse have been restored, and is gradually deflated.

Importance of Prompt Action.

Inasmuch as a large number of cases, details of which I do not propose to enumerate, are recorded in which patients apparently dead have been restored by cardiac massage after other methods of resuscitation have been unsuccessful, it is an obvious duty to perform heart massage before giving such a case up as hopeless. Statistics show, however, that the time which is allowed to elapse between the stoppage of the heart and the commencement of massage must not be unduly prolonged if a permanently successful result is to be expected.

The longest delay in beginning massage recorded in connexion with complete recovery of an apparently dead individual is eight minutes, and in this case the heart did not contract spontaneously until massage had been continued for five minutes (Sencert). It is quite possible to restore rhythmical cardiac pulsation after a much longer interval than eight minutes, but although the patient may be restored to life, as evidenced by the presence of a pulse and spontaneous breathing, permanent recovery is extremely doubtful; the heart and respiration cease, as a rule, within 24 hours, and during this period the patient rarely regains consciousness, although in one case, already mentioned, consciousness was temporarily restored. In this class of case the corneal reflex may quickly return, but no voluntary movements occur, although muscular spasm appears to be a late manifestation.

The reason of this incomplete restoration, and as to why permanent recovery does not follow the re-establishment of rhythmical cardiac and respiratory movements, has given rise to much speculation. It is well known that in man, if the higher nervous centres be deprived of oxygenated blood for even a few minutes, degenerative changes quickly follow; so it is argued that in such cases of imperfect restoration after cardiac massage the higher centres have suffered irreparable damage, and that the individual is acting as a mere automaton, life being maintained for a short time through the medium of the subcortical centres. Again, if the period before cardiac massage is started be unduly prolonged, the only attempt at contraction will be the occurrence of fibrillary twitchings, which, as has been emphasised already, are of evil omen. Green,[4] in an exhaustive paper on heart massage, makes the following remarks: "It has been frequently shown by Leonard Hill and others that sudden occlusion of the cerebral vessels, whether from ligature or spasm, gives rise to definite convulsive attacks, and sudden occlusion of the coronary arteries has also been shown to cause fibrillary contractions of the myocardium. Whether then the onset of muscular spasms some time after the pulse and respiration have been restored (in Lenormant's case the interval was one and a quarter hours and in my own case one hour) can be accounted for by a sudden and sustained cerebral anæmia, or whether, as has been suggested by Walker Hall, they are due to the accumulation of metabolic or even autolytic products, further investigation into the condition of the urine and tissues in similar cases may determine. At all events, we cannot exclude the possibility that in these cases the re-establishment of the circulation does not necessarily indicate the reconstitution of metabolism in the chief metabolic tissues, or even in the cerebral or spinal cells, and as regards the latter it is well known that when the circulation is arrested actual autolytic changes soon appear in the ganglionic nerve cells concerned in the mechanism of voluntary movement, though those of the heart and respiratory centre retain their vitality for a longer period. The practical point is that if either of these views is correct the commencement of massage must not be delayed too long, not only for fear that fibrillary contractions of the myocardium may supervene, but also to avoid permanent loss of consciousness and the development of spasms of the voluntary muscles." Further, Carrel,[5] in an article on the Surgery of the Thoracic Aorta and Heart, makes the following statements: It is well known that the heart loses its excitability very slowly, and that by using a proper method, it can be revived after a long period of immobility. We do not know exactly for how long it is safe to keep the heart motionless, but the complete stopping of the circulation is more dangerous for the organism than for the heart. Such a condition is called general death, but it is merely unmanifested life or latent life. The organs, being deprived of circulating blood, are not able to manifest life any longer, but they are still living and could revive, if they were given back their normal physico-chemical condition. Latent life is a very unstable state; without the circulating blood the tissues are not able to protect themselves against the microbes and the autolytic ferments which bring about protoplasmic degeneration—that is, elemental death. Immediately after the stopping of the heart the organism is placed in a condition intermediary between general and elemental death. This condition, from a medico-legal standpoint, is death. Nevertheless, as long as elemental death has not taken place, the organism can be resurrected. Therefore the length of time during which we can allow the heart to be stopped safely depends on the rate of development of elemental death. The brain disintegrates first. It is well known that complete ischæmia of the encephalon produces irreparable lesions, nevertheless, a short interruption of the circulation is not very dangerous.

Artificial respiration must be continued during the whole time that heart massage is being employed, and must still be persevered with after the re-establishment of normal cardiac contractions until normal breathing is established. In one successful case recorded by Lane normal cardiac pulsation was restored within a few seconds, but spontaneous breathing did not occur until artificial respiration had been employed for 12 minutes.

Choice of Cases.

With regard to the cases which are suitable for the performance of cardiac massage, those recorded have for the most part been patients suffering from an overdose of an anæsthetic, usually chloroform, and heart massage would appear to be eminently suitable as a means of resuscitation in such a state. Other cases have been those in which an operation has been commenced before the patient was properly under the anæsthetic (usually chloroform), and the stimulating effect of the scalpel has produced reflex inhibition of the heart; such cases, however, are usually quite easily brought round by ordinary restoratives, and heart massage is rarely called for.

Green, in his paper previously referred to, states that the kind of cases in which cardiac massage may be employed with a fair prospect of success are: 1. Cases of primary arrest of the heart in a condition of acute dilatation from

poisoning by an overdose of a powerful volatile drug, such as chloroform. 2. Cases in which the gradual accumulation of volatile poisons, such as chloroform, leads to primary paralysis of the respiratory and vaso-motor centres, followed by stoppage of the heart. 3. Cases of asphyxia. 4. Cases of paralysis of the vital centres from exhaustion or injury, followed by stoppage of the heart.

Most of the cases which have fallen to my lot come under the first two headings. I also remember trying the effect of cardiac massage on a child who had undergone tracheotomy for laryngeal diphtheria. The tube was successfully inserted, but breathing stopped and the pulse could not be felt. Artificial respiration was started, but the heart could not be made to beat by ordinary measures. Subdiaphragmatic massage by means of an abdominal incision was begun some 3–4 minutes after the heart had stopped, but it could not be made to beat again. I think, however, that in such a condition cardiac massage is well worth a trial, and I see no reason why a successful result should not be obtained. Such a case would come under the heading of "cardiac arrest due to asphyxia," although there is no doubt that diphtheritic toxins circulating in the blood may so paralyse the heart and vital centres as to negative success.

Conclusion.

In conclusion, I should like to emphasise the following points:—

1. In cardiac massage we have a very important adjunct to the methods of resuscitation, applicable in cases of heart failure during surgical operations, as also in certain other conditions already mentioned. With stoppage of the heart during the performance of an abdominal operation no time should be lost before starting subdiaphragmatic massage, and valuable time should not be wasted in the administration of drugs. Artificial respiration and cardiac massage should be carried out simultaneously. In such circumstances a very few compressions will usually re-establish the heart beat.

2. If heart massage be contemplated it should be commenced certainly within five minutes of cardiac arrest. I should personally be inclined to resort to massage after giving other methods a trial of only two minutes.

3. It may be necessary to continue rhythmical compression of the heart for several minutes before spontaneous contractions occur. In one temporarily successful case, mentioned earlier in this paper, the heart was massaged for 30 minutes before it could be made to beat; previous to this ordinary measures had been tried for 45 minutes.

4. The subdiaphragmatic route is undoubtedly the most satisfactory of the various methods of access to the heart for purposes of massage.

5. Artificial respiration should be commenced as soon as normal breathing has ceased, and should be persevered with until spontaneous breathing is re-established. As has been previously shown, it may be necessary to continue artificial respiration for some minutes after the heart beat has been restored.

6. In obstinate cases means should be adopted for raising the blood pressure, either by pressure on the abdominal aorta, bandaging the extremities, or the application of Crile's pneumatic suit, if this be at hand. Intravenous infusion of weak solutions of adrenalin in normal saline is also very efficacious, and this will be especially applicable in cases where intravenous infusion with saline has already been started before the heart stopped, when adrenalin can be quickly added to the solution. In cases where an intravenous infusion is not being already carried out this may be done quickly by using the internal saphenous vein, since the arms will be wanted for performing artificial respiration, or, as an alternative, the common carotid artery may be exposed in the neck, and a weak solution of adrenalin in normal saline solution be forcibly injected towards the heart by means of a syringe with a fine needle attached.

7. Injection of adrenalin solution into the heart cavities or wall is liable to set up fibrillary twitchings, and is of no use as a means of restoring normal cardiac contractions.

8. Never give up a case of apparent death under an anæsthetic as hopeless until cardiac massage and its various accessories have been given a fair trial.

References.—1. Igelsrud, 1901: Therapeutic Gazette, 1904. 2. Maag, 1900: Centralblatt für Chirurgie, 1901. 3. Sick, 1902: Centralblatt für Chirurgie, 1903. 4. Green: THE LANCET, 1906, ii., 1712. 5. Carrel: Transactions of the American Surgical Association, 1910.

PRELIMINARY REPORT ON THE INTRAVENOUS INJECTION OF ANTIMONY IN FILARIASIS.

BY LIEUT.-COLONEL SIR LEONARD ROGERS, M.D., F.R.C.P., F.R.C.S., F.R.S., I.M.S.

THE remarkable success of intravenous injections of tartar emetic in kala-azar, as first shown by Caronia in the Mediterranean form of the disease and independently a little later by the writer in the Indian form, has now been followed by the discovery of its value in bilharzial disease by Christopherson[1] in the Sudan, who found that the ova disappeared from the urine and the symptoms subsided, presumably as the result of the destruction of the adult worms in the abdominal blood-vessels. As it appeared to me to be possible that the adult filarial worms might be not less susceptible to soluble antimony salts than bilharzia, I recently went on short leave to Puri in Orissa, where filarial disease is extremely common, to commence an investigation on this important problem.

In the case of bilharzial disease the ova tend to pass fairly rapidly into the urine and fæces in order to escape from the body and proceed with the extra-corporeal stages of their development, so the complete and lasting cessation of their appearance in the excreta may be taken as evidence of the death of their parents. In filarial disease the problem may not be quite so simple, as the embryo filaria live for long protected by their sheath in the blood without further development, and presumably not absorbing much nutriment from the plasma. They may therefore prove to be less susceptible to the harmful influence of a toxic drug than the parent worms and thus live for long in the blood after the death of the latter, in which event prolonged observations will be necessary to establish the effect of any toxic drug on the parent worms. Our knowledge of the duration of the life of embryo filaria in the human circulation appears to be deficient, if we may judge from the scanty and varying statements on the subject. Thus Bancroft thought that filarial embryos may live for a number of months in the circulating blood, while Sir Patrick Manson records that after attacks of lymphangitis, which may result in cutting off the adult worms from the general circulation, he has watched the gradual disappearance of the embryo filaria from the circulation in the course of a year or more, and D. R. Croll,[2] with Australian experience, has recently stated that the embryos may disappear from the blood in about four years in cases not subject to reinfection, although in this case either death or isolation from the general circulation of the adult worms must presumably occur. It is, at any rate, clear that, if the embryos resist a drug which is fatal to the adult filaria, long-continued observations will be necessary to establish the effects of the treatment. In cases presenting periodical filarial fever cessation of the attacks may possibly afford some evidence of the efficiency of any drug.

Owing to the difficulties in India of following up native hospital patients, especially when they suffer so little inconvenience, as in most cases with filaria in the blood, I have not yet been able to obtain conclusive evidence of the permanent value of intravenous injections of soluble antimony salts, but I trust the following data may be of some interest and also stimulate others with greater opportunities and leisure than I have to tackle this important problem on similar lines. It is only through the great kindness of Dr. J. N. Das, Civil Surgeon of Puri, in collecting cases for my visit to Puri, and subsequently sending me blood slides and full reports, that I have been able to do anything in the matter, and I wish to express my deep obligation to him.

Plan of Work.

Before my arrival at Puri Dr. Das had found filaria in three patients, and during my week's stay the number was increased to 13 cases by blood examinations in 105 patients showing possible symptoms of filariasis, such as elephantiasis, lymphangitis, hydrocele or periodical fever, or abscesses. Fresh blood was examined between 9 and 10.30 P.M., and thick blood films made from measured quantities taken up in a Thoma-Zeiss white corpuscle counter up to the mark 0·5, and stained in watery methylene-blue. These were examined, under a low power and with a movable stage, the

next morning, when the number of embryo filaria in the measured quantity of blood was counted day by day. One case was kept as a control and 12 were treated, but two have been excluded from consideration as they only received two and four injections respectively and did not attend for later blood examinations. The remaining ten received from five to 11 injections, only two to six of which were full doses of 5 c.cm. of a 2 per cent. solution of sodium antimonium tartrate, or in two cases of 1 in 500 colloid antimony sulphide, which was used in preference to tartar emetic, as I have shown it to be less toxic One feeble old man of 70 received only 4 c.cm. doses. Cases 9 and 10 were treated with similar doses of a 1 in 500 solution of colloid antimony sulphide, which I have already reported to be effective and only very slightly toxic in kala-azar. In the case of both preparations the first dose was usually 2½ to 3 c.cm., and increased by ½ c.cm. at each injection until the maximum of 5 c.cm. was reached. The injections were made daily for eight days, when the patients remained under observation sufficiently long, and then every other day. I had intended to have continued the injections up to a total of 24 in some of the cases, but, unfortunately, owing to patients prematurely leaving hospital or ceasing to attend as out-patients, less than half this programme was completed in any of the first series of cases. Apart from occasional coughing and slight nausea, and in one case sickness, no toxic symptoms were observed.

TABLE I.—*Daily Counts of Embryo Filaria in Cases under Treatment.*

No. of case.	No. of doses.	Total dose in c.cm.	Cases treated with sodium antimonyl tartrate 1 in 50. Day—															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	11	46·0	51	—	87	87	89	88	122	70	23	151	107	96	16	3	3	—
2	10	40·5	3	—	1	4	0	0	8	24	3	5	14	3	3	17	6	16
3	10	43·5	2	—	3	10	4	6	6	0	3	13	3	1	0	0	0	—
4	8	37·5	5	—	0	6	2	1	1	4	0	0	0	9	2	—	—	—
5	7	27·0	26	—	—	18	31	—	67	6	3	—	—	—	—	—	—	—
6	7	31·5	6	3	7	2	1	3	1	—	6	6	3	10	2	—	—	—
7	6	27·0	102	141	60	31	4	43	29	11	15	25	—	—	—	—	—	—
8	6	20·5	90	26	43	16	6	31	43	2	20	36	—	—	—	—	—	—
			Cases treated with colloid antimony sulphide 1 in 500.															
9	5	22·0	2	4	0	0	1	0	0	0	—	—	—	—	—	—	—	—
10	5	22·5	181	—	109	—	129	104	—	—	—	—	158	—	—	—	—	—

Results.

The following are the data which have been obtained by the short trial so far made. In the first place, in the control case repeated counts in the measured quantity of blood taken at the same hour of the evening during two months showed the number found to vary only between 60 and 80 in 22 out of 25 counts kindly made by Dr. Das, while in the other three the figures were 50, 85, and 90 respectively. This control case shows that where numerous filaria are present they do not vary very greatly in numbers from day to day, so any great diminution numbers in treated cases is likely to be due to the drug used. The daily counts in the ten treated cases are shown in Table I., together with the number of doses of the antimony salts injected and the total number of cubic centimetres given. The first count in each case was made before the treatment was commenced, but owing to the shortness of my stay in Puri it was not possible to make repeated preliminary control counts in them. In some of the cases—namely, Nos. 1, 3, and 5—a temporary increase followed by a considerable decrease was noted, as if the drug first stimulated the birth of the embryos—possibly an indication of a slightly harmful effect on the parent worms, resulting in an increased output in an effort to preserve the species under unfavourable conditions. A still more interesting and promising feature was noted by Dr. Das after I had returned from Puri—namely, that in some cases, who had received eight or more doses of the sodium salt, fresh evening specimens of the blood showed greatly diminished activity of the embryos with very sluggish movements as compared with the normal, while in such specimens (protected from drying) the embryos all died during the night; whereas before treatment many of them were always quite active on the following morning and even much later. Moreover, this striking change was followed by a rapid diminution of the number of embryos, both changes having been especially well marked in Case 1, who received the largest amount of the drug. If this is confirmed by further work it will indicate that repeated injections of the antimony salts have some direct action on the embryo filaria, with the additional possibility that they will prove still more harmful to the adult worms, which must absorb a good deal of nutriment from the lymph stream to enable the numerous progeny to be produced.

The figures in the table require little comment. It is noteworthy that the diminution in numbers of the embryos is most marked in those in which the original numbers were greatest—namely, Cases 1, 5, 7, and 8, and especially in No. 1, who received the largest number of doses, but less so in 7 and 8, who received only six injections each. In the cases with low original counts the figures are less definite, No. 2 with ten injections and No. 6 with seven showing no diminution. No. 3 showed disappearance of the embryos for three days, but this result is discounted by the same effect in No. 4, being rapidly followed by a return of the parasites. Nos. 9 and 10, with five injections only of the much weaker solution of colloid antimony sulphide showed no definite effect on the parasites, as the original number was too small in Case 9 for any significance to be attached to their absence for three days after the injections, while in No. 10, with numerous parasites, no reduction occurred. As far as it goes, it points to the sodium antimonyl tartrate being more effective than the colloid antimony sulphide, while the former is also more easily procured.

Lastly, Dr. Das has just sent me a valuable report on an additional case in which he has been able to give 22 injections of the sodium salt in the course of 43 days with blood examinations up to the fifty-ninth day. A slight decrease after ten injections was followed by a slight increase after five days' omission of the drug, but further doses caused the parasites to disappear. Table II. summarises the data of this case in a convenient form.

TABLE II.

Days.	No. of injections.	No. of blood counts.	Average of counts.
Before treatment	—	1	7·0
1 to 15	10	12	8.0
16 ,, 21	0	5	5·0
22 ,, 31	6	8	6·5
32 ,, 45	6 ..... (to 43rd day)	9	0·7
58 and 59	0	2	0·0

The result in this case of numerous injections is thus satisfactory.

Conclusion.

All that can be said at present is that repeated intravenous injections of safe doses of sodium antimonyl tartrate appears to produce a definite diminution of the number of filarial embryos in the peripheral blood, which is probably due to a direct toxic effect on the embryos in view of the great decrease in the activity of their movements observed just prior to a rapid diminution in their numbers. Whether the treatment has any effect on the adult worms in the lymphatics or on the symptoms of the disease remains undecided, but the data so far obtained are sufficiently encouraging to make it advisable to continue the observations. I have now made arrangements to treat a further series of cases which can be kept longer under observation.

References.—1. THE LANCET, Sept. 7th, 1918, p. 325; and Brit. Med. Jour., Dec. 14th, 1918, p. 625. 2. Brit. Med. Jour., Jan. 4th, 1919, p. 28.

ASTLEY COOPER PRIZE FUND.—The trustees of this fund, who are the physicians and surgeons to Guy's Hospital, have been empowered to establish a studentship in connexion with the Gordon Museum of Guy's Hospital. The student will be elected for a period of three years and will be called the Astley Cooper Assistant to the Curator of the Gordon Museum. The present value of the studentship is about £150 per annum, with an additional sum of £50 for expenses. In accordance with the terms of Sir Astley Cooper's will the studentship shall not at any time be awarded to any member of the staff of Guy's or St. Thomas's Hospital or to anyone related by blood or affinity to them. Particulars regarding the studentship can be obtained from Mr. C. H. Fagge, M.S., Guy's Hospital, S.E.1, to whom application for the post should be addressed on or before Oct. 15th, 1919.

CONJUGAL TUBERCULOSIS.

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THE frequency of tuberculosis in the husbands of tuberculous wives and the wives of tuberculous husbands, compared with the rest of the community, has not yet been decided. It has also been much debated whether any increased incidence there may be is due to infection or not. Divers opinions are held, but probably the most authoritative is that conjugal infection, if it occurs at all in tuberculosis, is certainly infrequent, and any increased incidence is attributed to predisposition and causes other than direct infection. It is suggested, for instance, that so-called "assortative" mating will largely explain the difference—that is to say, a person predisposed to tuberculosis is attracted by, and mates with, another similarly handicapped.

Conduct of the Inquiry.

The work of tuberculosis officer in South Devon consists in visiting the homes of all notified cases of tuberculosis—subject to the wishes of the practitioner notifying—the home conditions are observed, and contacts examined *in the home.* Cases once seen are generally kept under further observation at intervals of three months to a year (there are now 4000 cases and contacts on my list), and in this way most of the contacts are examined sooner or later. Special facilities exist, therefore, for studying the problem of conjugal infection. My experience leads me to believe that the authoritative view is wrong, that it is direct infection and not predisposition which is the most important factor in the spread of tuberculosis, and that infection is correspondingly more frequent in a case of man and wife, where the exposure to it is greater and more prolonged.

Out of 156 cases in which the mate of a tuberculous husband or wife was examined 91 were found to be tuberculous, 16 suspect, and 49 negative; if we reduce these figures to percentages it gives approximately 58 per cent. tuberculous, 10 per cent. suspect, and 32 per cent. negative. Considering solely wives whose husband was first notified, we find, out of 120 cases, 66 tuberculous, 12 suspect, and 42 negative; or 55 per cent., 10 per cent., and 35 per cent. While among husbands of tuberculous wives we find, in 36 cases, 25 are tuberculous, 4 suspect, and 7 negative; or 69 per cent., 11 per cent., and 20 per cent. (Chart I.)

CHART I.—*Results of Examination of the Husbands and Wives of Tuberculous Patients.*

—	Number examined.	Tub.	Sus.	Neg.	Percentages. Tub.	Sus.	Neg.
Wives (husband first notified)	120	66	12	42	55	10	35
Husbands (wife first notified)	36	25	4	7	69	11	20
Total	156	91	16	49	58	10	32

These figures have been collected over a period of 5 years at the commencement of which I held no fixed opinion either way. In 15 cases the tuberculous mate first notified has died, and in 7 both husband and wife have died of tuberculosis. In deciding to which category a contact belongs the examination was not made so punctiliously that few could escape the net; two or more definite indications were required. Crepitations at one apex alone would not be called tuberculosis, but crepitations at one apex, plus a history of hæmoptysis, would so be called. Similarly dullness and crepitations at one apex would be classed as tuberculosis; and also failing health, hæmoptysis, and dullness, with crepitations, at one base. If the signs found were suggestive, but not sufficiently conclusive, the contact was classed as suspect.

Comparing now the results of examining contacts other than husband and wife: out of 1057 examined, 219 were tuberculous, 284 suspect, and 564 negative; or, roughly, 20 per cent., 27 per cent., and 53 per cent. (Chart II.) Taking as a further control the contacts of cases seen for an opinion and diagnosed non-tuberculous, either at the time of the first visit or later, out of 81 examined, 4 are found to be tuberculous, 7 suspect, and 70 negative; or in percentages 5 per cent., 8 per cent., and 87 per cent. (Chart III.) Cases of definite surgical tuberculosis, and their contacts, are included, but the number of such cases was relatively small.

CHART II.—*Results of Examination of the Contacts of Tuberculous Patients other than Husband or Wife.*

Number examined.	Tub.	Sus.	Neg.	Percentages. Tub.	Sus.	Neg.
1057	219	284	564	20	17	53

CHART III.—*Results of Examination of Contacts of Non-tuberculous Patients, including Husband or Wife.*

81	4	7	70	5	8	87

Discussion of Results.

In Dr. H. Sutherland's book ("Pulmonary Tuberculosis in General Practice") he states that out of 723 dispensary contacts examined 303 were tuberculous and 420 negative; he does not distinguish suspects. His figures for tuberculous contacts are higher, therefore, than mine, probably because they refer to contacts who went to a dispensary for examination, and a higher proportion of delicate contacts would be likely to go there than would be examined at home.

To consider for a moment the question of "assortative" mating (I think selective mating would be a better word), to which great importance has been attached by Pope and others. Among the working-class population, with whom my work is mainly concerned, I cannot discover that this factor comes into the question at all. Mating seems to be not so much selective as fortuitous: between the men and women who are most thrown in contact with one another. If a man or woman of a tuberculous type marries I do not find that they usually marry another of a tuberculous type. Moreover, by this time I know most of the markedly tuberculous families in South Devon and can recollect extremely few cases where two such families have intermarried, as they certainly would have done frequently in out-of-the-way places, where there are reasonable opportunities, if this sort of selection were an important factor.

No doubt a statistical study such as this is open to many criticisms. Different observers may place different interpretation on facts, and so classify them differently. For instance, take a family consisting of tuberculous father and mother and five children, three of whom are tuberculous: one observer will see a clear case of infection and another may consider it a case of family predisposition and selective mating. The important point in the present investigation is that the observations on man and wife contacts, on contacts other than man and wife, and on contacts of non-tuberculous patients are all made by the same observer and so may be justly compared with one another. Moreover, the records were made in the course of everyday work and not for the purpose of proving or disproving anything. The differences shown are more marked than could be accounted for by occasional errors, even if it was granted, for the sake of argument, that the error always occurred on the same side. Many more wives of tuberculous husbands than husbands of tuberculous wives were examined, partly because the wife is usually more available, partly because the husband was sometimes in the army. The higher percentage of tuberculous husband contacts is perhaps accounted for by the greater readiness of a man who is not feeling well to stay at home and be examined. I have not tried to discriminate between open and closed cases, or in cases where bacilli were found or not, because the closed cases often become open sooner or later, and because the examination for tubercle bacilli, if negative, must be several times repeated to be of any value. It must also be added that the figures here given are compiled almost entirely from the working and lower middle classes; the number of better class patients included is negligible.

The views held as to conjugal infection have been prejudiced to some extent by the well-known case of Metchnikoff, who married a tuberculous lady, and though exposed for years to infection never contracted the disease. This is after all only one case, and it is as unjust to argue from it as it would be to argue about diphtheria antitoxin from the death of the daughter of an early investigator in

this field after a first injection. No one can deny that the individual resistance to tuberculosis varies within wide limits, or, indeed, that there may be families of low resistance, but the main factor concerned in spreading the disease that suggests itself when visiting the homes of tuberculous patients is infection.

After following up cases of conjugal tuberculosis for some years I take the view that the great majority of the mates of tuberculous husbands or wives do sooner or later show signs or develop symptoms of tuberculosis; but I further believe that the great majority of those infected recover, and make a speedier recovery than most tuberculous patients. This may reasonably be attributed to an enhanced immunity conferred by the graduated doses of bacilli which they usually receive.

Well knowing the difficulties in the way of any statistical investigation such as this I make no claim that the present contribution is a final settlement of the question, but am sure that this important subject should be reconsidered in the light of the greatly increased material now available. On the opinion generally held regarding infection the success or failure of all our anti-tuberculosis work depends. Either we take the fatalistic view of a universal infection and family predisposition (I almost wrote predestination), and therefore direct our efforts to help the tuberculous individual, or we look upon the disease as infectious, and take means to prevent it by isolating highly infective cases; there being as yet no method of universal vaccination against tuberculosis. I estimate that over 50 per cent. of all cases seen are due to direct personal infection, and am therefore a strong advocate of preventive measures.

ON THE OCCURRENCE OF SPECIFIC AGGLUTININS FOR PFEIFFER'S BACILLUS IN THE BLOOD SERUM OF INFLUENZA CASES.

BY W. JAMES WILSON, M.D., D.SC., D.P.H.,

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(A Report to the Medical Research Committee.)

AT the present time the ætiology of influenza is attracting much attention. Many and various are the micro-organisms which are being advocated as the primary infective agents. Most investigators are in agreement as to the importance of pneumococci and streptococci in the infective process, especially in the later stages; but as to whether the *B. influenzæ* or a filtrable virus is the pioneer that prepares the way for these parasites opinion seems to be divided.

Some would appear to regard Pfeiffer's bacillus as being of little importance in the disease. The object of this short communication is to show that Pfeiffer's bacillus causes a very pronounced immunising response on the part of the influenza patient, and that this indicates that its presence is no mere coincidence, but that it is in some important way associated with the disease.

Nearly all who have studied the flora of the sputum of cases of influenza have succeeded in cultivating the *B. influenzæ* from such material in the majority of instances. Personally, both in France and in Ireland, I have readily obtained cultures from the bronchial expectoration. I may say that for many years I have used blood agar as a medium for examining sputum, and it is only since the present epidemic of influenza started that I have frequently encountered Pfeiffer's bacillus.

Agglutinin Experiments.

This investigation comprised the examination of 43 separate specimens of blood. Ten of the specimens were from cases that were definitely not influenza, but included such conditions as vaccinia, mumps, bronchitis, &c. In all of these no agglutinins for the *B. influenzæ* were found. The remaining 33 cases were typical examples of influenza of a severe type and all of them were suffering from or were convalescing from broncho-pneumonia at the date of the examination. As my investigation was made towards the close of the epidemic in Belfast my findings deal only with cases presenting lung complications, and I am unable to say whether agglutinins are present where the lungs escape.

Of the 33 the blood serum of 11 showed distinctly the presence of agglutinins for Pfeiffer's bacillus. Now the important point emerged that the positive cases were all still running a temperature, whilst those that were negative had been afebrile for periods varying from 6 to 32 days. The study of three cases showed me that the agglutinins very rapidly disappear from the blood when the patient becomes convalescent.

CASE 1.—T.S. on 29/3/19 agglutinated in a dilution of 1 in 160. The onset of the disease was on 24/3/19. His temperature became normal on 24/4/19 and on 7/4/19 his serum failed to agglutinate in dilutions varying from 1 in 2 up to 1 in 800.

CASE 2.—W. J. B. on 7/4/19 agglutinated in a dilution of 1 in 80. The onset of the disease was on 4/4/19. His temperature became normal on 8/4/19, and on 12/4/19 his serum failed to agglutinate in any dilution. This patient had been admitted to hospital on 6/3/19 with a temperature of 104° and signs of broncho-pneumonia. His temperature became normal on 14/3/19, but on 4/4/19 his temperature again rose to 100° and he had a sore throat, and it was at this period that the blood tests were made.

CASE 3.—W. N. was admitted to hospital on 6/4/19, and his temperature was 102°. After 12/4/19 there was no pyrexia. On 7/4/19 his serum agglutinated the influenza bacillus in a dilution of 1 in 1000. On 12/4/19 agglutination occurred only in a dilution of 1 in 80, and on 17/4/19 agglutinins were entirely absent from his serum.

The titre of the 11 positive cases was as follows: One in a dilution of 1 in 1000, four in 1 in 160, three in 1 in 80, and three in 1 in 40.

Technique.—In small test-tubes 0·5 c.cm. of 1 in 10, 1 in 20, 1 in 40, and 1 in 80 dilutions of the serum were put up, and to each of them an equal volume of the bacterial suspension in salt solution was added. The tubes were placed in a water-bath at 50°–52° C. for four hours, and at the end of this time the reading was taken. As a rule the results at the end of four hours were the same as at the end of two hours. After this preliminary test higher or lower dilutions were employed.

The bacillary suspension was prepared from cultures in Petri dishes and in Roux bottles of Pfeiffer's bacillus, the growth being washed off in normal saline solution. The emulsion was opalescent and of a similar uniform turbidity to that employed in the serological diagnosis of enteric fever. As a preservative 0·1 per cent. formalin or 0·5 per cent. carbolic acid was added. Large quantities of the emulsion were prepared at a time and each new batch was tested with serum of a known titre, so that my results are quite consistent and constant throughout. Moreover, in determining the course of development and fall of the agglutinins in a case specimens of serum taken at an earlier date were tested along with those more recently procured.

Five different strains of Pfeiffer's bacillus were employed separately. Three of these strains were found to be identical in their agglutinability, one was less agglutinable, and one was totally unaffected by the sera employed in our tests. This inagglutinable strain was isolated from a case a few weeks before my agglutination experiments commenced, and I had not an opportunity of trying the effect of the patient's serum on her bacillus. It may be that there are several types of the *B. influenzæ*, but it would seem from my limited number of experiments that the great desideratum in the agglutination test is to employ a bacillus which is readily agglutinated by influenza cases, and on which normal serum has no effect in any dilution.

The medium employed consisted of agar to which blood was added and boiled, or of agar with which was incorporated blood treated with normal sulphuric acid and then neutralised in accordance with Fleming's procedure.

Complement-fixation Reaction.

The method employed was a modification of No. 4 Medical Research Committee, Special Report Series, Wassermann test. The antigen was a fresh saline (0·85 per cent. saline and 0·5 per cent. phenol) suspension prepared from 48 hours growth of Pfeiffer's bacillus on Fleming's medium. The antigen was titrated alone and in the presence of normal serum, and in the test at least half the strength of that fixing complement in the presence of normal serum was employed. The inactivated serum was diluted 1 in 20, as experiments showed that with the comparatively strong antigen I was

employing a dilution of 1 in 5 of the serum was liable to give false positive results. The complement was a 1 in 10 dilution of guinea-pig's serum, and a serum was regarded as yielding positive result if, in the presence of antigen, it fixed 3 M.H.D.

Soon after my technique had been developed the supply of clinical material was exhausted, but I had a supply of sera of Cases 2 and 3 taken on 7/4/19. Experiments with these two sera showed that in the conditions above mentioned complete fixation of complement occurred whilst the sera of five controls were quite negative.

Complement-fixation is not likely to be of any value in the diagnosis of influenza, but I am quite satisfied from my results that an immune body appears early in the blood of the patients and disappears quickly during convalescence.

Toxic Effect of Cultures on Rabbits.

Pfeiffer early demonstrated the toxic effects produced in rabbits by the intravenous injection of living or dead cultures of his bacillus. The animals presented symptoms of profound muscular weakness and pronounced dyspnœa and death occurred in 2–24 hours. In these cases the fatal result has usually been attributed to the action of an endotoxin on the central nervous system.

The following experiment performed by me would seem to indicate that the condition of the lungs may be a contributory cause of the symptoms.

A rabbit was inoculated intravenously with 0·5 c.cm. of a moderately strong suspension of the *B. influenzæ* in normal saline. For half an hour after the injection no symptoms were noticed, but the rabbit was found dead two hours later. A post-mortem examination conducted within two hours showed no gross lesions beyond some congestion of the lungs, distension of the heart, and other evidence of death from asphyxia. Microscopic sections of the lungs displayed distinct hyperæmia of the arterioles and capillaries, and emigration of the leucocytes into the air cells. The alveoli in scattered areas contained a material which stained faintly red with eosin, and resembled that often found in the lungs of human cases. It would seem to be of an albuminous nature and to be indicative of œdema of the lungs. The air cells lost their distinct outline, the congestion of the capillaries and the emigration of leucocytes, as well as the œdema, contributing to this result. Other air sacs in the neighbourhood showed over-distension and acute emphysema. The leucocytes in the vessels are greatly increased in number; in a section of an arteriole there was on an average one white cell to every four or five red cells. It is surprising that these results could be produced in two hours, but the effect of the influenza bacillus on the rabbit's tissues is well worth further study and may throw some light on the pathology of the disease in man.

Conclusions.

(1) Agglutinins for Pfeiffer's bacillus early appear in the blood of cases of influenza. The titre may be as high as 1 in 1000.

(2) These agglutinins rapidly diminish as soon as the temperature falls, and are absent at the end of a week's convalescence.

(3) These agglutinins for the strains of bacilli studied by me are absent from the blood of normal individuals and of influenza convalescents even when tested for in a dilution of 1 in 2.

(4) Complement can be fixed by an immune body present in the serum of influenza patients at the height of or early in the disease.

(5) The intravenous injection of rabbit with cultures of Pfeiffer's bacillus causes death in a few hours and the congestion and œdema found in the lungs may account for the dyspnœa and asthenia which precede the fatal issue.

In conclusion, my best thanks are due to Colonel Egan, R.A.M.C., the O. i/c. Military Hospital, Belfast, and to Dr. A. Gardner Robb, the medical superintendent of the Belfast Fever Hospital, for the facilities they so willingly afforded me of procuring the material on which my investigation is based. I am indebted to Dr. N. C. Graham for help in obtaining specimens.

MEDICAL MAGISTRATE.—Dr. John W. Staniforth has been added to the commission of the peace for the North Riding of Yorkshire.

BRONCHO-SPIROCHÆTOSIS IN EGYPT.[1]

BY NAJIB FARAH, M.D.,

FORMERLY INSTRUCTOR IN THE AMERICAN SCHOOL OF MEDICINE, BEIRUT.

THE geographical distribution of broncho-spirochætosis has not yet been well determined. The disease was first described in 1905 by Castellani in Ceylon. It was later found in India, the West Indies, Philippine Islands, and in other parts of the tropics by Waters, Branch, Jackson, Chalmers, O'Farrell, and others. Cases were recently reported from certain parts of Europe by Castellani in the Balearic-Adriatic zone, by Galli Valerio in Switzerland, and Lurie in Serbia. Violle was the first to find it in France in 1916, attacking Europeans who had never been in tropical countries before, as well as colonials.

In view of the fact that I have met with the disease recently for the first time among the natives as well as among the foreigners in Alexandria, it would be worth while, I think, from a clinical standpoint, to write a few words about the disease as it came under my observation.

It should be noted that the sputum was collected in every case in a sterile receptacle, after the patient had rinsed his mouth and gargled with an antiseptic solution, and was carefully examined microscopically. Cultures were also made, and I believe this should be done in every doubtful case of bronchitis to determine its ætiological factor. I am indebted to my distinguished colleague, Dr. Milton Craindiropoulo, director of the bacteriological laboratories of the Sanitary Quarantine Service in Egypt, for his kind collaboration in my bacteriological investigations. Bronchial spirochætes, tubercle bacilli, ova of *Distoma westermanii*, and fungi were particularly looked for in every sputum examined, and out of 22 cases who spat bloody expectoration I found 6 were due to bronchial spirochætes, 12 to tubercle bacilli, 2 to *B. Pfeiffer*, and 2 to broncho-moniliasis.

The stain we have been using for our spirochæte specimen is Leishman's stain. The spirochætes we have found are polymorphous in character. Cultures for hyphomycetes were made on Sabouraud's maltose-agar. I have not yet met with a case where there was an associated infection.

The cases I have seen were between the ages of 20 and 40.

Symptoms.—The majority were more or less chronic coughers. In one case the disease was of four years' standing. The general health of these patients was satisfactory and they complained of no, or little, pyrexia. Hectic temperatures were, however, reported. Practically all the the cases complained of a sense of oppression behind the sternum. The cough began either acutely or insidiously and varied in intensity from slight to severe. The expectoration differed in amount and character, from scanty to moderate, or, rarely, abundant; mucoid, or muco-purulent, often bloody or streaked with blood. Attacks of hæmoptysis not infrequently occurred. The physical examination of the chest often revealed nothing particular; few showed signs of bronchitis with varying râles, and seldom signs of consolidation. Among the acute cases the disease in one of the patients declared itself abruptly, with chill, fever, and symptoms of acute bronchitis, with headache and rheumatoid pains, followed by marked debility and impotence for about five months. In another case the patient was suddenly taken with a severe hæmoptysis amounting to about 400 g. of blood, followed by another one after a quiescent period of 35 days, during which he scarcely coughed. In another the patient complained of chill, fever, trifling cough, and a stitch under the right nipple, with signs of pleurisy, without effusion, followed 25 days later with a severe hæmoptysis. The temperature in these acute cases was not high, ranging between 38°–39° C., and did not last longer than ten days. The acute cases often passed into the chronic condition. I have not yet met with a fulminating case.

Diagnosis and prognosis.—Practically all the cases of broncho-spirochætosis I have observed were taken for phthisis. Examination of the sputum revealed total absence

[1] I think I am also the first to find broncho-moniliasis in Egypt, which I am making a subject for further investigation. I am inclined to believe also that it is not infrequently to be met with here. The two cases I have observed have already been confirmed by Mr. Albert Chalmers, Director of the Wellcome Tropical Research Laboratories at Khartoum, to whom I have sent cultures and to whom I am indebted for the identification of the causal fungi.

of tubercle bacilli and the specimens were swarming with bronchial spirochætes of varying shapes. In no one case have we found tubercle bacilli in association. Branch described one such case.

The condition should also be well differentiated from endemic hæmoptysis by the absence in the sputum of ova of *Paragonimus westermanii*, from broncho-mycosis by the absence of fungi, and from influenza by the absence of Pfeiffer's bacillus. The prognosis is favourable more especially when the patient is properly treated. I have not yet met with a relapse after my treatment, notwithstanding the continual presence of very few spirochætes in the sputum of some of the patients.

Treatment.—Besides the hygienic and dietetic measures, arsenic, specially arsenobenzol and tartar emetic, have been used with satisfactory results. In all my cases I have been trying lipiodol (Lafay) intramuscular injections of 2 c.cm. each. Lipiodol is an iodine preparation analogous to iodipin, and according to the formula of the maker every c.cm. contains 0·54 g. of pure iodine. The preparation is not painful, or only slightly so, when injected. The cases with hæmoptysis were kept in bed, and calcium chloride was administered as well as a daily injection of one ampoule of lipiodol. A course of six to ten injections of 2 c.cm. each were given to every patient, one injection daily, followed by 20 more injections on alternate days. In no case have symptoms of iodism appeared.

The majority of my patients were practically well after this treatment, as proved by the improvement in their general condition and the disappearance of cough. A few continued to have a slight cough with a little mucoid or muco-purulent but never bloody expectoration, which contained very few spirochætes compared with their great number before commencing the treatment.

I have also tried lipiodol injections on the two cases of broncho-moniliasis mentioned above on the assumption that the anti-parasitic action of potassium iodide, used so far as specific in broncho-mycosis in general, was due to the iodine. Besides, I have refrained from administering potassium iodide, as it has the disadvantage of deranging the stomach. In the one case a severe form of one and a-half years' standing with fever and pneumonic-like exacerbations and attacks of hæmoptysis, and in the other of eight years' standing, after four intramuscular injections of lipiodol of 2 c cm. each, one injection daily, to every patient, the monilia in the first case was entirely absent from the sputum, as proved by our cultures of seven days' duration; in the second case we found only one single colony in our Petri dish on the fifth day. This was accompanied by a great amelioration in the symptoms in both cases. The fungus could no longer be found in the sputum, subsequent to the treatment, as the iodine in the lipiodol had evidently put an end to it. It is hoped that both patients will be cured eventually if not cured already, as witnessed by the great improvement in their chest condition and general health. The action of the iodine in this respect may be compared to the action of emetine in dysentery. But, unlike the emetine, which only destroys the amœbæ which penetrate the mucous membrane of the gut, leaving those on the surface and the cysts unattacked, the iodine in the lipiodol in broncho-moniliasis most probably not only destroys the monilia in situ, but also, in the course of its elimination through the mucous membrane of the respiratory tract, kills the organism lying quietly on the surface of the air-passages awaiting a chance for further evolution.

I greatly recommend full trial of injectible iodine in both: broncho-spirochætosis and broncho-moniliasis or broncho-mycosis in general.

Alexandria.

LITERARY INTELLIGENCE.—Mr. William Heinemann announces that he has in preparation a book on "The Medical Prevention of Venereal Disease," by Sir Archdall Reid, with an introduction by Sir Bryan Donkin.

OPHTHALMOLOGICAL CLINIC IN PARIS.—We have received notice of an ophthalmological clinic conducted by Professors Laparsonne and Terrien and their assistants at the Hotel-Dieu in Paris. The course is to consist of 16 lectures, clinical meetings, and practical demonstrations, commencing on Tuesday, Oct. 14th, at 4 o'clock, and continued daily. The course is open to medical practitioners and students, both French and foreign, the fee for the course being 50 francs. Those who attend the course will be entitled to a certificate. Particulars can be obtained from the Secretary of the Faculty of Medicine.

FOREIGN BODIES IN THE ŒSOPHAGUS AND RESPIRATORY PASSAGES.

REMARKS ON THE DANGERS ARISING FROM THEIR IMPACTION AND SOME DIFFICULTIES WHICH MAY BE MET WITH IN THEIR REMOVAL:

A PLEA FOR THE ABOLITION OF THE COIN-CATCHER, THE BLIND USE OF THE BOUGIE AND PROBANG, AND THEIR REPLACEMENT BY THE DIRECT ENDOSCOPIC METHODS OF EXTRACTION.

BY IRWIN MOORE, M.B., C.M. EDIN.,
SURGEON TO THE THROAT HOSPITAL, GOLDEN SQUARE, W.

(*Concluded from p. 575.*)

PART II.

FORCEPS FOR THE REMOVAL OF FOREIGN BODIES.

IT has been shown by many cases reported that considerable difficulty is frequently found in removing foreign bodies when impacted, since they may be securely grasped by and wedged between the œsophageal wall, and often embedded; moreover, the forceps in general use have often proved to be too delicate and liable to break or slip off when an object has been seized. The non-slipping foreign-body forceps (Figs. 35 and 38*) which I have designed and described [65] have done away with these difficulties, for they will grasp and hold any shape or kind of foreign body so securely that when, for example, a coin is seized it is impossible for it to slip from the blades of the forceps during extraction.

In Fig. 36 the forceps are seen seizing the coin, whilst Fig. 37 shows the forceps blades, having drawn the coin upwards on to the spatula portion of the tube, acting as a wedge in the tube, thus holding the coin so securely that the coin, forceps, and tube may be removed en masse without any fear of the coin slipping, the weight of the electroscope and tube against the forceps blades only further increasing their holding power. As previously stated, endoscopic tubes with plane—i.e., non-bevelled—extremities are much better suited for the removal of the majority of foreign bodies—especially those of large size—than those with spatula extremities.

In Fig. 38 the movable jaw of the forceps is shown opening posteriorly towards the spine. The shank can be turned round through two right angles so that this movable jaw opens out either anteriorly or posteriorly, showing the advantages—especially in the case of impacted coins—of reversing the blades of the author's forceps, by revolving the shaft on the handle. The movable blade, opening posteriorly instead of anteriorly, may be passed down in close contact with the post-œsophageal wall, thus pressing back any fold, or insinuating itself posteriorly between the fold and the upper edge of the coin. (Fig. 39.)

Since writing this paper in 1915, the publication of which has been deferred on account of the war, the author's attention has been drawn to a short notice by Chevalier Jackson [66] introducing a pair of downward action œsophageal forceps on the principle of the alligator forceps (as used in America) for the same purpose and to overcome the same difficulties as described by the author. That the author's forceps have been in use in this country for the past five years is probably unknown to Chevalier Jackson. The actual seizing of a coin often has to be done blindly because the blades and shanks of the forceps nearly fill the lumen of the tube, especially in children. It is a popular error, even amongst endoscopists, that in order satisfactorily to remove foreign bodies from the œsophagus or respiratory tract the forceps require to be so slender in proportion to the diameter of the examining tube that they will not obstruct the view through the tube. This is generally only necessary where pins or other fine-pointed foreign bodies have to be dealt with, and where their seizure is only possible under the direct guidance of the eye.

Fletcher Ingals [67] very aptly suggests that the forceps, before insertion through the endoscopic tube, should be measured off to the length of the tube and marked by a narrow strip of adhesive plaster wound round it so

* Figs. 35 to 40 inclusive were published with Part I. of this paper.

[65] Irwin Moore, "On Removal of Foreign Bodies from the Œsophagus and Bronchi," THE LANCET, 1916, i., pp. 992–996.

[66] Laryngoscope, 1918, xxviii., p. 49.

[67] Trans. Amer. Laryngol., Rhinol., and Otol. Soc., 1909, 377.

that the operator may know when it reaches the lower end of the tube. He also points out that having located a foreign body—e.g., in the lung—one may sometimes grasp it while it is in sight, but commonly the forceps so obstruct the view that this is difficult. In such cases, if a forceps is used that has no sharp teeth to injure, e.g., the lungs, the instrument may be passed down in such a position that when the blades are open they must pass on each side of the foreign body; then when the mark over the stem shows that the end of the forceps has nearly reached the body the blades are opened and the instrument passed in about 1·5 cm. further, when the blades may be closed with as much assurance of catching the object as though it were done under direct inspection.

In Fig. 40 the author's forceps are seen in position in the endoscopic tube attached to the Kahler electroscope, which is recommended by the writer in preference to that of Brünings for the removal of foreign bodies, since it allows more room to work and the easier application of larger and heavier instruments.

The author's case previously referred to, was reported to the Laryngological Section of the Royal Society of Medicine with the object of emphasising the great advantage of the more modern direct-vision method of removal over the old-fashioned coin-catcher which should now be obsolete; also to draw attention to the important point that coins almost invariably lie against the posterior wall of the œsophagus, and have their flat surface antero-posterior; the anterior wall being flaccid and easily stretched, thus allowing œsophagoscopic tubes in many cases to pass easily up and down in front of a coin without touching it, which accounts for frequent difficulty in finding them.

COINS IN THE RESPIRATORY PASSAGES.

Since this article deals to such a large extent with coins, it would be incomplete without reference to those cases where they have been aspirated into the respiratory tract.

Examination of the literature shows that this is a rare occurrence. Coins or buttons which pass into the air-passages are usually arrested in the larynx, but they may also lodge in the trachea, and small ones may enter the bronchi. On account of its larger diameter coins are more

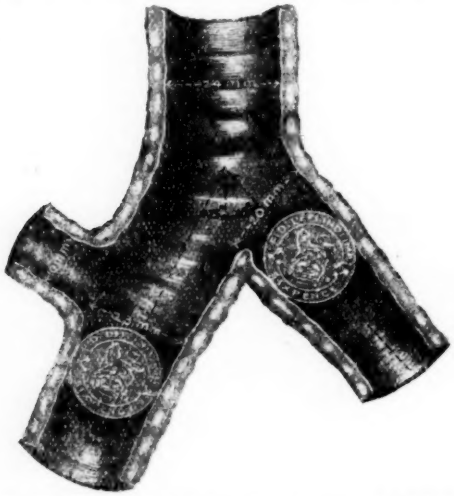

FIG. 41.—Vertical transverse section of the bifurcation of the trachea, viewed from the front, specially drawn to illustrate the fact that a sixpenny-piece will just enter the left bronchus, whilst it will pass down the right bronchus for one inch. The diameter of the trachea, right and left bronchus, and right epi-arterial bronchus are shown, also the inclination of the bifurcation angle showing why it is easier for a foreign body to pass into the right bronchus than into the left.

like to enter the right bronchus than the left. It is important to note that the left bronchus will just allow a sixpence (19 mm. diameter) to enter, whilst the right bronchus will admit one to a distance of an inch. (Fig. 41.) A shilling (23 mm. in diameter) will just enter the right bronchus, but not the left bronchus.

It is astonishing how the larynx and bronchi can tolerate the presence of coins. Instances are on record of large ones impacted and remaining for a long time in the respiratory passages without causing death, and in some cases only giving rise to minor symptoms, such as slight irritation and cough, whilst in other cases the violent attacks of coughing from which the patients suffer in their attempts to dislodge the foreign body has led to rupture of the pulmonary vesicles, followed by emphysema and pneumothorax. The impaction of a foreign body may also terminate the patient's life by acute bronchitis, followed by suppuration or gangrene of the lung. In other cases the foreign body serves as a nucleus, around which tuberculous deposit may take place. Guisez† (Paris) believes that many children die from the effects of an aspirated foreign body—e.g., from bronchitis, pneumonia, or tuberculosis, without the cause being diagnosed. J. D. Rolleston[68] found, from the statistics of the fever hospitals under the Metropolitan Asylums Board, that during the 15 years (1899–1913) there were only 6 cases of foreign bodies in the air- and food-passages which had all been certified as diphtheria—3 were foreign bodies in the larynx, 1 in a bronchus, and 2 in the œsophagus.

Since a number of deaths have been reported from acute or chronic affections of the lungs, where the diagnosis has been obscure, and foreign bodies found post mortem, it is important to keep in mind that unilateral affections of the lungs, especially in children, may be the first indication that a foreign body has been inhaled.

Statistics of Coins in the Respiratory Passages

Gross[69] (Louisville, U.S.A.) in 1854 tabulated 183 cases of foreign bodies in the air-passages, of which only seven were coins.

Poulet,[70] in his work on "Foreign Bodies in the Respiratory Passages," published in 1880, refers to only six cases of coins.

Durham[71] in 1883 collected together 706 cases, and mentions only two coins.

Weist[72] (Richmond, U.S.A.), in 1883, amongst 1000 collected cases, does not specially refer to coins, but evidently includes a few under the heading of miscellaneous foreign bodies.

Roe[73] (Rochester, N.Y.) in 1893 collected together 762 cases of foreign bodies in the air-passages, amongst which were six coins.

Hoffmann[74] (Leipzig), in 1897, amongst his tabulated list of 160 cases, only refers to four coins.

Hodge,[75] in his superadded list to that of Hoffmann of 92 cases, only mentions two coins.

Thomas Claytor[76] (Washington) in 1906, in his observations on 50 cases, only refers to one coin.

Chevalier Jackson[77] (Philadelphia) in 1915, amongst his 369 tabulated cases of foreign bodies in the food- and air-passages, records that only 19 were coins and 10 were buttons. Of the 19 coins only 1 was situated in the respiratory passages, whilst the 10 buttons were equally divided between the food- and air-passages.

The author can only trace 33 cases of coins in the respiratory passages recorded during the pre-bronchoscopic days—i.e., a period of 80 years, from 1819 to 1900—and 4 since the introduction of bronchoscopy in 1904—i.e., during the past 14 years. These cases are of such interest that the author takes this opportunity of condensing and publishing them altogether.

Lescure[78] (Paris) reports a case where a louis d'or was impacted in the right bronchus, at the level of the bifurcation of the trachea, for five and a half years. Patient was unable to lie down and finally died of *phthisis*. At the autopsy the right lung was found nearly destroyed by suppuration and the right thoracic cavity was filled with pus.

Key[79] (Camberwell) reported the case of a sixpence in the right bronchus of a man aged 35. Patient suffered from a violent cough and was unable to stoop or lie down without exciting the cough. At the end of the fifth week attempts to remove the coin (believed to be in the larynx) by laryngo-fissure failed. Three months later a tracheotomy was performed, but the patient died one hour afterwards from *apoplexy*. At the autopsy the coin was found in the right bronchus—the mucous membrane of which was thickened and ulcerated.

Dupuytren[80] (Paris) reports a case in which a half-franc piece remained in the bronchus (which one was not stated) of a man, aged 26 years, for 10 years before producing death. The coin was movable for the first five years, patient being inconvenienced by a cough and occasional attacks of dyspnœa, after which it became impacted and

† Du diagnostic des corps étrangers trachéo-bronchiques, Journ. des Praticiens, 1913, xxvii., p. 421.

[67] Proc. Roy. Soc. Med., 1914, viii. (Sect. Dis. Child.), p. 39.

[68] Foreign Bodies in the Air Passages, 1854. Cited by Burnett, Dis. Nose and Throat, 1883, ii., p. 517.

[69] Foreign Bodies in Surgery, 1880, ii., pp. 1–95.

[70] Holmes's Syst. of Surgery, 1883, i., p. 709. Cited by Burnett, op. cit., p. 515.

[71] Trans. Amer. Surg. Assoc., 1883, i., p. 117.

[72] Cited by Burnett, op. cit., p. 516.

[73] Specielle Pathologie und Therapie, 1897; also Nothnagel's Encyl. Pract. Med., 1903, Eng. edit., pp. 39–59.

[74] Op. cit., pp. 59–69.

[75] Amer. Med., 1906, xi., p. 396.

[76] Per-oral Endoscopy, 1915, Phila., pp. 382–396.

[77] Mem. de l'Acad. Roy. de Chir., Paris, 1819, cccli. Cited by Gross, Foreign Bodies in the Air-passages, Phila., 1854, p. 448. Cited by Hoffmann, Nothnagel's Encyl. Pract. Med., 1903, Eng. edit., p. 40.

[78] THE LANCET, 1829, ii., p. 661. Cited by Gross, op. cit., p. 403.

[79] Leçons Orales, Paris, 1833, iii., p. 584. Amer. Journ. Med. Sci., 1830, vi., p. 518. Cited by Gross, op. cit., p. 449. Cited by Poulet, Treatise on Foreign Bodies in Surgery, 1880, ii., p. 63.

caused no further trouble. Death resulted from *phthisis*, and at the autopsy the coin was found embedded in a tubercular cavity.

Hochsteter[81] (Augsberg) refers to a Portuguese ducat as having been inhaled into the "respiratory tract," causing only hoarseness on exertion. It was expectorated 2½ years later and patient recovered.

Benjamin C Brodie[82] records the case of the celebrated engineer Brunel, who accidentally inhaled a half-sovereign into the right bronchus, resulting in a troublesome cough. Tracheotomy was performed on the 24th day without result. Sixteen days later patient was inverted and the coin was coughed up.

James Duncan[83] (Edinburgh) had a case where a shilling passed into the larynx of a man and became impacted there. At first violent fits of coughing and difficulty in breathing occurred, soon followed by comparatively mild symptoms. The voice was reduced to a whisper. Inversion was carried out, the patient well shaken, and the coin expelled.

Lenoir[84] (Paris) reports the case of a man who inhaled a 50-centime coin, and it entered the right bronchus. By inversion and striking the patient on the back the coin was coughed out.

Edward Cock[85] (Guy's Hospital) records the case of a man, aged 35, with a sixpence in the right bronchus. He had a violent cough, expectoration of blood, and movement of the coin up and down the trachea. After a few days the coin was expelled during sleep.

J. O'Reilly[86] (New York) refers to another case of a sixpence in the left ventricle of the larynx in a male aged 30 years. Patient suffered from dyspnœa, loss of voice, and cough. Twenty-six days later, by inversion of the body, the coin was expelled.

T. G. Geoghegan[87] (Dublin) reports the impaction of a fourpenny-piece in the larynx, probably the ventricle, of a lad aged 17. It was followed by cough and great difficulty in breathing, which speedily subsided. Three days later the coin was expelled, during a fit of coughing.

Adam Leith[88] (Manchester), had a case where a sovereign was impacted against the side of the larynx in a soldier, aged 25, causing difficulty in breathing and occasional fits of coughing, with hoarseness of voice. Two months later the coin was removed by laryngotomy after inversion had failed.

G. B. Halford[89] (Westminster Hospital) succeeded in expelling a shilling from the larynx by inversion and shaking.

Burdon Sanderson and J. W. Hulke[90] refer to a case in which a sixpence was lodged in the larynx of a man, aged 27, during ten weeks. It was horizontally placed in the larynx below the false vocal cords. Between its free edge and the arytenoid cartilage was a transversely oblong breathing space 1 10th of an inch wide from back to front. The first symptom was suffocation, but later perfectly tranquil breathing ensued. Patient was unable to speak above a whisper. Laryngotomy was performed, but during the operation patient coughed up the coin into the mouth and swallowed it, the coin passing into the stomach and being evacuated per anum the following morning.

Petrie[91] (Liverpool) refers to the case of a child, aged 10 years, who had a penny impacted in the larynx for six years, during which time it gave rise to no urgent symptoms. It was diagnosed by the laryngoscope and was successfully removed by endolaryngeal forceps, having become very corroded and losing 18 gr. in weight.

Cameron[92] (Liverpool) also reports the same case and mentions that the coin was embedded in the posterior wall above the vocal cords, in the vertical position. Beyond a cough, some stertor, and snoring at night, there were no symptoms.

Thomas Watson[93] refers to an instance in which a piece of gold lodged for years in one of the ventricles of the larynx without causing any distressing symptoms. It was finally coughed up.

Charles Roberts[94] (York) reports the case of a woman who inhaled a half-sovereign into the larynx. Alarming dyspnœa immediately occurred, necessitating tracheotomy. Search failed to find the coin, and on the third day the patient coughed up the coin.

Henry Smith[95] (King's College Hosp.) records a case where a half-sovereign was impacted in the larynx of a male whilst under the influence of alcohol. It was diagnosed by the laryngoscope. It lay between the two vocal cords, almost completely filling up the inlet of the larynx, only a small space being left behind, very little air being admitted to the lungs. Patient could only whisper. (Fig. 42.) The coin was removed by laryngotomy.

West[96] (Birmingham) performed laryngo-tracheotomy to recover a shilling in the larynx of a youth, aged 22 years. Early symptoms of suppuration occurred which were later relieved and lasted a month followed by cough and dyspnœa. The foreign body was felt movable in the trachea and the patient could not lie on the left side. Attempts at removal failed, so laryngo-tracheotomy was performed and the coin successfully removed. Patient made a rapid recovery.

Heider[97] refers to the case of a child, aged 3½ years, who inhaled a coin. Frequent cough with difficulty in breathing ensued, with emaciation. Physical signs indicated that the coin was present at the bifurcation of the trachea. All symptoms improved and recovery became complete during the ensuing years.

Krishaber, M.[98] (Paris) refers to three cases in his experience, the first a male, aged 36, who aspirated a 30-centime piece during an outburst of laughter. It became impacted in the larynx, and was seen lying flat across the vocal cords, with its edges caught between the ventricles of Morgagni. Extraction was attempted next day by laying the patient face down across a bed, with the head hanging over the side. The finger of the left hand was introduced as far as the epiglottis as a guide for a pair of forceps which were passed into the larynx. The coin was seized but slipped. Another attempt with patient in the sitting-up position shifted the coin, which was swallowed and later evacuated per anum. The second case was also a male, aged 35, who aspirated a 50-centime piece whilst drinking. The coin became impacted in a similar position to the last, but leaving only a small space for respiration. An urgent tracheotomy became necessary, and a few days later patient was placed on the back with the head hanging over (the Rose position), and under an anæsthetic a bougie was introduced through the tracheal wound which dislodged the coin, and it was expectorated. The third case was a girl, aged 9 years, who aspirated a small copper coin whilst laughing, which was seen six hours later lying in the larynx in the usual position across the cords. With the patient lying face downwards across a bed and the head hanging over forceps were introduced and the coin was seized and removed. Krishaber advocated this position as the most likely to dislodge a coin and cause a natural tendency for it to fall out of the mouth on to the floor.

Joseph Bell[99] (Edinburgh) had a case where a sixpenny-piece was inhaled into the left bronchus of a male. A few days later patient was inverted and tapped smartly on the back opposite the left bronchus, when the coin was coughed out. No laryngeal or pulmonary symptoms were present. Laryngoscopic examination showed the coin lying edgeways in the left bronchus, just at the bifurcation.

Frank Ives[100] (New York) refers to two cases of foreign bodies (coins) in the larynx; removal. The first case was a girl, aged 16, with a 10-cent. piece. Laryngoscopic examination showed the coin standing up on its edge in the left pyriform sinus. (Fig. 43.) It caused only trifling inconvenience. Removed by forceps. The second case was that of a man, aged 47, with a 10 cent. piece which caused violent attacks of coughing and the voice was reduced to a whisper. Laryngoscopic examination showed the coin lying horizontally in the anterior portion of the larynx, resting upon the vocal cords, the edges anteriorly being under the vocal cords. Upon attempted phonation the cords were separated about a quarter of an inch. Two attempts to remove it by forceps failed. Next day, following a bad coughing attack, patient found his voice restored and believed he had swallowed the coin. Laryngoscopic examination showed that the coin was not in the respiratory passage or chest.

Grazzi[101] (Florence) refers to another case where a 2-centime piece was fixed in the ventricles and lay horizontally across the anterior two-thirds of the vocal cords leaving the posterior one-third of the glottis free for respiration. (Fig. 44.) He successfully removed the coin by means of horizontal-grasping laryngeal forceps under guidance of the laryngeal mirror.

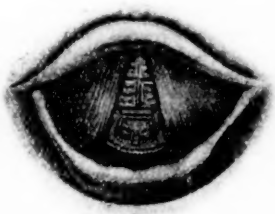

FIG. 42.—Half-a-sovereign impacted in the larynx—between the ventricular bands and cords—leaving only a small breathing space posteriorly. (To illustrate Henry Smith's case.)

FIG. 43.—A 10-cent. piece standing upon its edge in the left pyriform fossa. (To illustrate Frank Ive's case.)

FIG. 44.—A 2-centime piece fixed in the ventricles—lying horizontally across the anterior two-thirds of the vocal cords—leaving only one-third of the glottis free for respiration. (To illustrate Grazzi's case.)

[81] Cited by Gross, op. cit., p. 130.

[82] Med. Chir. Trans., Lond., 1843, xxvi., p. 286. Cited by Gross, op. cit., p. 356. Cited by Poulet, op. cit., p. 73.

[83] North Journ. Med. Edin., 1845, ii., p. 220; Lond. Med. Gaz., 1845, N.S., i., p. 218. Cited by Gross, op. cit., p. 202. Cited by Poulet, op. cit., p. 73.

[84] Journ. de Malgaigne, 1845, iii., p. 55. Cited by Poulet, op. cit., p. 73.

[85] Lond. Med. Gaz., 1845, N.S., i., p. 554. Cited by Gross, op. cit., p. 132.

[86] New York Med. Gaz., 1852, iii., p. 224. Cited by Gross, op. cit., p. 301.

[87] Dub. Med. Press, 1854, p. 225. Cited by Roaldes, Trans. Amer. Laryngol. Assoc., 1894, p. 104.

[88] THE LANCET, 1858, ii., p. 395. Cited by Roaldes, op. cit., p. 104.

[89] Cited by Holmes, Principles of Surgery, 1861, ii., p. 308. Cited by Poulet, 1880, p. 73.

[90] Dub. Med. Press, 1864, p. 225. Cited by Roaldes, op. cit., p. 104.

[91] Brit. Med. Jour., 1870, ii., p. 186.

[92] Liverpool Med. and Surg. Rep., 1870, iv., p. 188. Cited by Bosworth, Dis. Nose and Throat, 1892, p. 700.

[93] Pract. of Physics, 1871 (9th edit.), ii., p. 261. Cited by Arthur E. Durham in Holmes's Surgery, 1883, i., p. 760; and Morell Mackenzie, Dis. of Nose and Throat, 1880, i., p. 414.

[94] Brit. Med. Jour., 1871, i., p. 61.

[95] Ibid., p. 7. Cited by Roaldes, op. cit., p. 104.

[96] THE LANCET, 1877, ii., p. 722. Cited by Poulet, op. cit., p. 82.

[97] Cited by Poulet, op. cit., 1880, ii., pp. 51-52.

[98] Ann. des Mal. de l'Oreille, du Larynx, 1880, tome vi., p. 319.

[99] Edin. Med. Jour., 1881, xxvi., p. 1104.

[100] Archiv. of Laryngol., N.Y., 1883, iv., p. 204. Cited by Roaldes, op. cit., p. 104.

[101] Boll. delle Mal. dell'Orecchio, &c., 1884, N. 4. Cited by Bosworth, op. cit., 1892, i., p. 709.

Fauvel[102] (Paris) reports the case of a 50-centime piece impacted in the larynx for two days. It was fixed in the ventricles, its inferior aspect reposing upon the vocal cords and between its posterior edge and the arytenoid region was a space of 2 or 3 mm. It was removed by thyro-fissure.

Beverley[103] (Norwich) refers to a man, aged 42, who had inhaled a threepenny-piece into the larynx, causing difficulty in breathing which soon subsided. Laryngoscopic examination showed the coin lying across the true cords, impacted above their anterior extremities. Inversion and succussion was tried twice without avail. Thyro-fissure was performed, but the coin slipped back into the throat, and passed into the stomach, to be evacuated 9 days later per anum.

A. W. de Roaldes[104] (New Orleans, U.S.A.) reports a similar case to that of Grazzi—a male, aged 25, with a gold piece in the larynx. There

FIG. 45.—A gold coin in the larynx. View on quiet respiration.

FIG. 46.—The same, on attempted phonation. (To illustrate A. W. de Roaldes case.)

was at first intense dyspnœa, and severe cough which soon abated. The coin was seen by laryngoscopic examination impacted between the vocal cords and ventricular bands. (Figs. 45 and 46.) It was removed by laryngeal forceps and mirror.

Binswanger[105] (Portland, U.S.A.) refers to a man having swallowed a dime which entered the right bronchus. It was coughed up after three months.

Wyman[106] (Detroit, U.S.A.) refers to the case of a man who inhaled a 10-cent. piece into the air-passages. Dyspnœa and cyanosis followed. Patient was suspended by the feet and the dime fell out of the mouth. Recovery.

Walker Downie[107] (Glasgow) reports the case of a man who swallowed a threepenny-piece during intoxication. Loss of voice and some difficulty in breathing followed for four weeks. Symptoms were attributed to a cold. The coin entered the larynx and was impacted across the vocal cords, so that their anterior and posterior extremities only could be seen. It was successfully removed by rectangular laryngeal forceps, opening antero-posteriorly.

Macintyre[108] (Glasgow) reports a case where a half-sovereign was aspirated into the right bronchus "some years previously." A severe spasm of the larynx occurred at the time, followed by another three months later, after which there was no further recurrence. X rays showed the coin in the right bronchus. Up to the date that the case was reported patient was contented to leave well alone, and so no attempts had been made to remove it.

H. Burger[109] (Amsterdam) refers to the case of a man, aged 34, who "swallowed" a silver coin. Little inconvenience followed. Per-oral bronchoscopy was carried out without narcosis, and the coin removed from "the lower part of the bronchial trunk" (whether right or left is not stated). No bad effects followed. Recovery.

Somerville Hastings[110] scored a great success for per-oral bronchoscopy in the case of a newsvendor who accidentally inhaled a half-sovereign. Nearly two years afterwards the coin was discovered by Mr. Hastings in the right bronchus and removed by per-oral endoscopy. Death unfortunately occurred ten days later from pulmonary tuberculosis caused by the long sojourn of the foreign body in the lung.

Chevalier Jackson[111] (Philadelphia) reports a case where a coin (a nickel) measuring 21 mm. (just over ¾ inch) in diameter was impacted in the trachea of a child, aged 3 years, for one day. The child suffered from extreme dyspnœa. The coin was successfully removed by bronchoscopy.

Summary of Results.

Of the 37 cases of coins in the air-passages collected by the author during a period of nearly a century (from 1819 to 1915), 22 were impacted in the larynx, 3 were in the trachea, 9 in the right bronchus, 1 in the left bronchus, whilst the remaining 2 were stated to be in a bronchus (in which lung was not stated). Seventeen were coughed up (8 assisted by inversion), and 2 coughed up into the mouth, swallowed, and later evacuated per anum. Death occurred in only 4 cases; from pulmonary tuberculosis in 3, and apoplexy in 1. Thyro-fissure was performed in 1, laryngotomy in 2, and laryngo-tracheotomy in 3 cases (in 1 of these the coin was coughed up, swallowed, and later evacuated per anum). Laryngeal forceps were used in 6 cases, no attempts at removal in 2 cases, and per-oral endoscopy employed with success in 3 cases. The longest sojourn of a coin in the larynx was six years (the case of Petrie) and in the bronchi 10 years (the case of Dupuytren).

It is astonishing that the remote effects of the sojourn of coins in the respiratory tract—judging from the records of these 37 cases—were so rarely associated with death. Only 4 deaths in 37 is a small number compared with the deaths reported as resulting from the impaction of coins in the food passages. The inaccessibility of the respiratory passages to the coin-catcher, bougie, and probang, and their consequent safety from the rough treatment generally meted out to the œsophagus, would appear to be the chief reason of these happy results.

Since the risk of inversion has so frequently been referred to in the removal of foreign bodies from the respiratory passages, it is interesting to note that amongst these 37 cases of coins no death occurred as a result of removal by this method, nor even when success did not follow this treatment.

THE BLIND USE OF THE BOUGIE AND PROBANG.

Reference to a few cases from amongst the many reported are here given to emphasise the dangers. Felix Semon[112] refers to a case which illustrates the danger of forcibly pushing down angular foreign bodies which have entered the mouth. A piece of rabbit bone having been swallowed, a practitioner attempted to push it down with a bougie and caused dangerous traumatic perichondritis of the larynx. Thyrofissure was performed during the acute stage of the perichondritis and the rabbit bone successfully removed. D. R. Paterson[113] showed at the Section of Laryngology, Royal Society of Medicine, on Dec. 6th, 1912, a piece of chicken bone 1¼ in. long removed from the œsophagus just below the cricoid. Both its extremities were sharp and illustrated the danger of attempting to push down such a body with a bougie. The same author[114] reports the case where a large irregular piece of bone, 1 in. (23 mm.) by ¾ in. (17 mm.), was accidentally swallowed in some soup and became impacted in the œsophagus. It was successfully removed by œsophagoscopy, but the patient died six days later from septic absorption from a lacerated œsophageal wall as a result of previous attempts made by a non-specialist to push it down with a bougie.

It is surprising to find that Mosher[115] refers to the bristle probang as *permissible only* in cases where a bolus of meat or a smooth foreign body like a coin or button is lodged at the back of the cricoid cartilage, and says that it is often successful in such cases and without danger, but that when rough foreign bodies like meat bones are to be dealt with its use is contra-indicated. In the author's experience it is in these very cases where a bolus of meat has become impacted that the risk of blindly using a probang is inadvisable, for a sharp piece of bone may be attached to the meat and may not be shown by the X rays. By the blind use of the probang in such a case a tear of the œsophageal wall may occur, followed by sepsis and death. Again, the suggestion still made by some surgeons to push down a foreign body into the stomach by means of a bougie, to be later removed by gastrotomy, cannot be too seriously condemned. Lambert Lack[116] refers to having in one case of impaction of a large tooth plate pushed it down into the stomach, and left it to the surgeon to deal with it by that route. He says "some foreign bodies which will not come up can be pushed down easily."

Friedberg[117] (Chicago), on the other hand, refers to a case of a young child having swallowed a piece of ham bone. A physician attempted to remove it and under the theory that "what would not come up must go down," pushed it with a bougie, as he thought, into the œsophagus, but really through the œsophageal wall. Suppuration in the tissues of neck followed, and the bone was removed by external excision. Death resulted from the infection. Chevalier Jackson[118] maintains, and quite rightly, that it should be

[102] Gaz. des. Hôp., August 25th, 1887. Abstract Journ. Laryngol., Rhinol., and Otol., 1887, i., p. 381.
[103] Brit. Med. Journ., 1889, ii., p. 14.
[104] Trans. Amer. Laryngol. Assoc., 1894, p. 102.
[105] Med. Sentinel, Portland, Ore., 1898, iv., p. 329. Cited by Hodge, Nothnagel's Encyc. Pract. Med., 1903 edit., p. 62.
[106] Physician and Surgeon, Detroit and Amer. Arbor, 1897, xix., pp. 198–207. Cited by Hodge, op. cit., p. 65.
[107] THE LANCET, 1899, ii., p. 1018.
[108] Journ. Laryngol., Rhinol., and Otol., 1900, xv., p. 357.
[109] Nederl. Tigdscha. v. Geneesk, 1909, Bd. i., p. 671. Abstract Laryngoscope, 1910, xx., p. 351.
[110] By verbal communication to H. D. Davis "On the Importance of a Very Thorough Examination in Cases of Foreign Bodies Alleged to have been Swallowed or Inhaled," THE LANCET, 1914, ii., p. 493.
[111] Per-oral Endoscopy, 1915, p. 382.
[112] Journ. Laryngol., Rhinol., and Otol., 1894, p. 149.
[113] Op. cit., 1913, xxviii., p. 258.
[114] Op. cit., 1916, xxxi., p. 149.
[115] Trans. Amer. Laryngol., Rhinol., and Otol. Soc., 1909, p. 409.
[116] Journ. Laryngol., Rhinol., and Otol., 1916, xxxi., p. 151.
[117] Ann. Otol., Rhinol., and Laryngol., 1917, xxvi., p. 771.
[118] Trans. Internat. Cong. Med. Lond., August, 1913, Sect. xv., p. 24; Journ. Laryngol. Rhinol. and Otol., 1914, xxix., p. 375.

possible under general anæsthesia and with full muscular relaxation to retrieve by the same route any foreign body that has gone down the œsophagus. Force, he says, must be avoided, and turning or morcellation employed if the foreign body be impacted.

Tilley[119] relates the case of a man, aged 52, who swallowed a tooth-plate during sleep. The following day he visited a *general hospital*, where two prolonged but ineffectual attempts were made to force the denture into the stomach by bougies. 48 hours later he was admitted to University College Hospital very ill and collapsed. By direct œsophagoscopy the denture, which was seen surrounded by folds of œdematous and lacerated mucous membrane, was successfully removed, patient dying the third day after from septic pulmonary symptoms. Post-mortem showed two large sloughing perforations of the œsophagus, through one of which it was obvious the bougie had passed 4 inches downwards into the adjoining mediastinum. The same author[120] also refers to another case where a piece of turkey bone was removed by œsophagoscopy from the gullet and where previous attempts on three occasions had been made to push it down with a probang, causing serious ulceration of the œsophagus.

Kelson,[121] in referring to the dangers of blind instrumentation, reports a case where a piece of nut stuck in the man's gullet. The following day "vigorous and painful instrumentation was carried out by a doctor with a probang," resulting in recurring deep abscesses in the neck, which required many operations before they were cured. Loubet Barbon[122] (Paris) reports the case of a woman, aged 60, suffering from difficulty in swallowing due to a stricture in the upper third of the œsophagus. A bougie was passed which caused a false passage resulting in subacute emphysema and death. The same accident may occur in strictures caused by impacted foreign bodies where bougies are used.

Guisez[123] (Paris) has related some cases of mediastinitis resulting from the passage of œsophageal bougies, and he considers that the instrument ought to be proscribed. Chevalier Jackson,[124] in condemning the use of the bougie in the localisation of œsophagically lodged foreign bodies, refers to "the useless waste of time lost by the blind passage of bougies, whether disease or a foreign body is suspected," and he considers "the last defence of the blind bougie for diagnosis is based upon obsolete conditions," and that "the œsophagoscope passed by sight is safer than the bougie—the latter being a relic of pre-bronchoscopic days." He thinks it is "a crime to pass an instrument blindly into the œsophagus in an attempt to remove a foreign body." Gordon King[125] (New Orleans) remarks that since the advent of the X rays and the perfected œsophagoscope the detection and removal of foreign bodies of the gullet and air-passages have been greatly facilitated. Anyone called upon to relieve such cases is no longer justified in resorting to the older methods of probang, œsophageal sounds, or the coin-catcher. Killian[126] has emphasised the danger of blind attempts at removal of foreign bodies from the œsophagus. He says ulceration or mediastinitis may as a result develop and fistulæ open into the trachea, or the aorta may be punctured. Tilley[127] says, "blind groping in these regions has been responsible for an appalling number of fatalities. For this reason coin-catchers, umbrella-probangs, and such like should be relegated to the historical sections of anatomical museums." The author of this paper has previously referred[128] to cases exemplifying the serious results which may follow ill-advised and blind attempts to push down foreign bodies with the bougie.

Importance of Considering Practical Points.

In all cases, therefore, in dealing with foreign bodies in the œsophagus and respiratory passages it is important that the many practical points referred to in this paper should be considered. No unnecessary delay should occur in extraction. In the case of foreign bodies in the œsophagus, the post-œsophageal wall should be especially carefully searched by tilting the distal end of the endoscopic tube, both during its downward passage and during its withdrawal. It is well to remember that the local application of cocaine, or a mixture of cocaine and adrenalin to the œsophageal walls, will greatly assist the successful extraction of foreign bodies by contracting the swollen mucosa and overcoming spasm. Preference should also be given to larger tubes with circular extremities, and the largest size used compatible with safety.

In the removal of foreign bodies from the œsophagus under general anæsthesia, and for this purpose chloroform is best, the passage of the œsophagoscope is exceedingly liable—especially in children—to produce pressure on the larynx or trachea, thus impending or even causing cessation of respiration. It is important, therefore, in these cases to obtain the services of an expert anæsthetist; the breathing should be carefully watched so that due warning may be given to the operator when the airway becomes obstructed, and the tube should be immediately withdrawn for a few minutes until the breathing has again become normal.

THE LANCET in a leading article[129] on "Foreign Bodies in the Lower Air-Passages and Œsophagus" says, "there are still those who use for removing foreign bodies from the lower air-passages and from the œsophagus methods which can at best be described as antiquated, and which should no longer be thought worthy of consideration where an endoscope is available."

Another leading article[130] in THE LANCET on Foreign Bodies in the Bronchi, referring to the rapid progress that has been made during recent years in this special branch of surgery says: "Every general hospital should be provided with the latest instrumentarium necessary for the practice of these direct methods of exploring the food and air passages, and the laryngologist who is expert in using them should be the first person summoned when emergencies of this sort reach the hospital." With a foreign body in the œsophagus or respiratory passages the patient is not free from danger until it is successfully removed.

It is the duty, therefore, of the specialist to devise such means for overcoming the many varied and unexpected difficulties which beset the path of this—one of the greatest advances in surgery. By drawing attention to these cases, along with the opinions expressed by competent authorities, it is hoped that it may help towards the early elimination of these obsolete methods of treatment in the surgery of foreign bodies in the air and food passages, and encourage the more scientific and practical methods of bronchoscopy and œsophagoscopy.

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[120] Proc. Roy. Soc. Med., 1917, x. (Laryngol. Sect.), p. 88.
[121] Op. cit., 1917, x. (Laryngol. Sect.), p. 93.
[122] Journ. Laryngol., Rhinol., and Otol., 1913, xxviii., p. 560.
[123] Ibid.
[124] Per-oral Endoscopy, 1915, pp. 218-219.
[125] Trans. Amer. Laryngol. Assoc., 1905, p. 202.
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[127] THE LANCET, 1918, i., p. 287.
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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF PHLEGMON OF NECK FROM PERFORATION OF PHARYNGEAL WALL BY A SWALLOWED FOREIGN BODY.

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WHETHER any foreign body in a bolus of food passes straight down the œsophagus into the stomach or is caught in some part of its passage depends on three factors: (1) its size; (2) its shape; (3) its position in the bolus of food. A smooth foreign body of such a size as to escape notice in bolting the food by a ravenous eater will almost certainly pass into the stomach. An irregularly shaped foreign body—e.g., a dental plate or portions of the flat bones of animals (shoulder blade or hip bone)—will often be caught in some part of its passage, more generally in the œsophagus than in the pharynx. A sharp-pointed foreign body of small size may be caught at any part of its passage downwards and perforate the walls of the pharynx or œsophagus if it lies on the surface of the bolus of food.

In the majority of cases of perforation of the walls of the food passages, the foreign body does not succeed in completely passing through, but is arrested in its passage so that part of it still remains in the pharynx or œsophagus, where it can be seen by the indirect or direct methods of examination, and its extraction more or less easily carried out. In the remaining minority of cases, where the foreign body completely perforates the walls, its subsequent removal depends on whether it can be localised by means of the X rays or not. If it can be localised, an immediate operation can be performed and the foreign body sought for in the indicated position; otherwise the case has to be carefully watched, as one may be uncertain whether or not the foreign body has been swallowed and entered the stomach. It is notorious, for instance, that many cases come up to hospital complaining of having swallowed something which has stuck in their throat. The most thorough examination fails to reveal any sign of a foreign body; the symptoms gradually abate, and in a few days the patient has entirely forgotten the accident.

Once perforation of the pharyngeal or œsophageal wall has taken place inflammatory changes are set up from infection of the connective tissue spaces and an abscess results. This may occur even after the foreign body has been removed. Patterson[1] reports a case of a woman who swallowed a fish-bone and reported at hospital two days later, saying it had stuck in her throat. No bone could be seen either with the mirror or the œsophagoscope. Next day a fish-bone was vomited up. Two days later there was a swelling in the neck, and five days afterwards pus was evacuated by a free incision behind the sterno-mastoid. Gantz[2] relates a case of abscess of the neck due to swallowing a small piece of bone, which was removed from the left sinus pyriformis; three days later signs of an abscess of the neck began to appear, from which offensive pus was subsequently evacuated; the case ultimately recovered after showing signs of an œsophageal fistula. If the posterior wall of the pharynx is perforated spinal meningitis may be caused, as in the following interesting case reported by Marschik.[3] A girl, aged 4, accidentally swallowed a needle, which was seen sticking in the posterior pharyngeal wall; it was broken during extraction and a part left behind. The parents insisted on taking the child home, and did not come back until a week had elapsed, when the child was readmitted with fever and stiffness of the neck. An X ray photograph showed the remaining fragment of the needle, half a centimetre in length, in the retro-pharyngeal space. An attempt to extract it with forceps failed, though a small area of bare bone on the vertebral column was discovered. External pharyngotomy from the right side was performed, and a fistula, 2 cm. deep, found in the corresponding disc. After some difficulty the fragment was found and extracted, and the child recovered for the time being and was sent home three weeks after the operation. Six weeks later she was admitted to another hospital with signs of meningitis, from which she died in a few days. Autopsy showed a fistula between the bodies of the third and fourth cervical vertebræ communicating with the spinal canal and causing pachymeningitis and then leptomeningitis. There was also a large abscess in the right frontal lobe which had ruptured into the ventricle, and several small abscesses in the left frontal lobe.

Author's Case.

Mrs. X., aged 47, was admitted to the Bradford Royal Eye and Ear Hospital on March 29th, 1919, complaining of having swallowed a piece of glass which had stuck in her throat. A broken jar of marmalade had been delivered at her house, and having cleared it, as she thought, of all fragments, she hastily ate some bread and marmalade at 11.15 A.M. She experienced a sharp cutting pain in the left side of the throat, and immediately went to Dr. Glen Parker, of Bradford, who sent her up to hospital at once. I saw her at 2 P.M., and she was then firmly convinced that the piece of glass was sticking in her throat. I examined her very carefully both by direct inspection from the mouth and by the laryngoscopic mirror, but could see no trace of a foreign body; there was, however, a little blood-stained mucus in the hypopharynx on the left side. She was then examined with the œsophagoscope, again with a negative result, except for a little blood-stained mucus in the œsophagus. Even if a piece of glass had been embedded in the wall of the pharynx it would probably have been very difficult to see, as by its refractive properties it would have taken on the colour of the medium by which it was surrounded.

As I was not satisfied with the result of the examination I kept her in hospital under observation. She continued to complain that the fragment was still in her throat, but had no other symptoms until the evening of April 5th, when she had a temperature of 99·6° F. The following evening it was 100·2°. I saw her on April 7th and found that she had a brawny swelling of the left side of the neck along the anterior border of the sterno-mastoid muscle, with its most prominent part about the level of the lower border of the thyroid cartilage. Examination with the laryngoscopic mirror showed considerable œdema and some bulging of the left lateral pharyngeal wall as far down as the commencement of the œsophagus, and slight collateral œdema of the left ary-epiglottic fold; the whole area was bathed in thin stinking pus, which conferred a very foul odour on the breath.

Operation.—Chloroform was administered, and to avoid an unsightly scar an almost horizontal incision was made over the most prominent part of the swelling, having the anterior border of the sterno-mastoid muscle at its centre. The anterior edge of the muscle was defined and a pair of sinus forceps pushed cautiously in. Almost immediately a quantity of extremely fœtid pus was evacuated. The opening of the abscess cavity was enlarged and the cavity explored with the finger. I then felt what I took to be the foreign body lying in the angle between the vertebral column and the lowest part of the pharynx. A pair of dressing forceps was introduced and a piece of glass, a quarter of an inch long and less than an eighth across at its widest part, brought to light when they were withdrawn. A drainage-tube was inserted and dressings applied. The fœtid discharge ceased in three or four days, and the patient was discharged cured on April 27th.

In this case it was thought at first that the patient had swallowed the foreign body completely, as nothing could be seen except a little blood-stained mucus, with either the mirror or the œsophagoscope. Further, no help could be expected from the X rays, as glass is transparent to them. It is fortunate that she was kept under observation, and further, that the foreign body was discovered in the abscess cavity.

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RETROGRADE INTUSSUSCEPTION OF JEJUNUM THROUGH STOMA OF GASTRO-JEJUNOSTOMY.

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As a very rare and late sequela of gastro-enterostomy the following case appears worthy of record.

E. S., male, aged 61, admitted April 2nd, 1919, to London Hospital for hæmatemesis.

Past history.—Thirteen years ago underwent gastro-jejunostomy at another hospital for gastric trouble, with very good result; remaining well for 12 years. One year ago he began to have abdominal pain after meals and vomiting, which relieved the pain. There were intervals of remission of these symptoms of as much as a month. Two days before admission he had a worse attack of pain, associated with hæmatemesis, which continued till his admission to hospital.

Present state.—A very sick patient, with abdominal facies. Pulse 100. Repeated vomiting of large quantities of blood-stained dark fluid, not so thick and clotted as is usual in hæmatemesis; the dark colour suggested the presence of bile, but being seen at night this was uncertain. The abdomen was flaccid, and a vague elongated mass could be felt above and to the left of the umbilicus; this mass struck one as being too soft to be a peptic jejunal ulcer with adhesions about it.

Emergency laparotomy.—A few adhesions of the transverse colon to the abdominal wall were separated, the stomach and pylorus appeared normal in front. Turning up the stomach to examine the stoma the distal loop of the jejunum coming from the stoma was found to be turgid and purple for 8 inches, at which point the entrance of a retrograde intussusception was found. The intussusception passed up the turgid distal jejunal limb, its apex projecting about 3 inches into the stomach through the stoma, and was, in fact, the elongated swelling felt through the abdominal wall. The intussusception was reduced without great difficulty, and had started apparently about a foot below the stoma. The reduced gut was very œdematous and purple, but at no point could any thickening suggestive of ulceration be felt, and the gut appeared viable; the abdomen was closed. Duration of operation 20 minutes.

After history.—After a slight brown vomit the next day the patient improved till the seventh day, when respiration became rapid, and he began to bring up offensive sputum, and finally died on the tenth day.

Post mortem.—The lungs were in a condition of severe broncho-pneumonia with many abscesses; the abdomen, except for slight plastic peritonitis about the site of intussusception and remains of bruising of the gut, was normal.

The gastro-enterostomy as seen at operation proved to be in excellent order, of good size, and well planned. The reason of the retrograde intussusception and its relation to the late dyspepsia and vomiting does not appear certain. At any rate, there was no evidence of a peptic jejunal ulcer before or after death.

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Reviews and Notices of Books.

The Principles and Practice of Obstetrics. By JOSEPH B. DE LEE, A.M., M.D., Professor of Obstetrics at the North Western University Medical School. With 949 illustrations, 187 in colour. Third edition, thoroughly revised. London and Philadelphia: W. B. Saunders Company, Ltd. 1918. Pp. 1089. 36*s.*

IN the third edition of this very complete work a thorough revision has been carried out. As the author remarks in his preface, although, owing to the war, progress in obstetrics has been slow, yet this has not been altogether a disadvantage since it has given time for the investigation and confirmation or rejection of recent contributions to this branch of medical science.

Further experience of Abderhalden's method of diagnosing pregnancy has led to the conclusion that little of practical value is gained from this complicated biochemical test. If it is negative in the hands of a competent chemist it speaks against pregnancy, but not absolutely. If it is strongly positive, in a case of doubt one might lean a little towards the diagnosis of pregnancy. This appears to us a correct summing up of the value of what after all is a test of little clinical importance. A very interesting account is given of the use of nitrous oxide and oxygen in labour cases, and while not unduly enthusiastic over the method the author states that he uses it very frequently for suitable cases, and recommends it. In this connexion we are interested to see that Dr. De Lee is not in favour of twilight sleep, and states that it is being used as a routine in only a very few hospitals in America. As he rightly says, it requires on the part of the attendant a high degree of obstetric skill apart from his ability properly to conduct the seminarcosis. It demands the constant attendance, or at least proximity, of the accoucheur, and if it is to be properly administered a well-equipped maternity hospital. He is convinced that its employment will result in a repetition of the fœtal and maternal mortalities and morbidity of 12 years ago.

In discussing the treatment of eclampsia the author states that more space is given to the conservative method; apparently, however, he is in favour of the rapid emptying of the uterus as soon as one convulsion has occurred. It is, however, a little difficult, reading the account given of the treatment of this disease, to determine which plan the author adopts in the majority of cases. The chapter dealing with tears of the vulva and perineum is very complete and well illustrated, and evidently the author lays great stress upon the proper treatment and repair of such injuries. An interesting practical point in this edition is the prominence given to the advantages claimed for rectal examination in conducting labour Dr. De Lee points out that it is extremely useful, can be practised with very little pain to the patient, and inasmuch as the chance of infection is practically nil, can be repeated as often as may be necessary without increasing the risks to the patient. The chapter on the treatment of labour in contracted pelves is one of the best in the book, and it is well worth careful note that Dr. De Lee has obtained better results in the treatment of labour in contracted pelves by the use of the exaggerated lithotomy position than by the Walcher position. In discussing hebosteotomy the conclusion is drawn that the operation has been too hastily condemned; the author's own experience has been favourable, and he thinks that it will hold a permanent place in obstetric surgery. In considering home versus hospital practice in cases of contracted pelves, for the general practitioner prolonged expectancy is considered to be the best treatment for all but the absolutely contracted pelves, followed by a trial with the forceps. If this fails craniotomy should be resorted to, as the information gained will enable the attendant to obtain ideal arrangements for any future deliveries.

The chapter on Cæsarean section is very full and well illustrated; the classic variety, Kronig's cervical Cæsarean section, and the extra-peritoneal methods are all described, and their various indications given. At the present time the author only practises the classical method when there is some general indication for the operation, such as placenta prævia or fibroid tumours of the uterus; in all other cases he performs the cervical operation. He claims for this the following advantages: that the incision is

made in the lower uterine segment, the uterine and parietal peritoneum may be temporarily united if desired, the intestine and omentum are not usually seen, the uterine sutures are more quickly applied, and the danger of subsequent adhesions is reduced to a minimum. When the patient is positively infected craniotomy is considered the safer operation, and in doubtful or mild cases one of the extra-peritoneal methods. The question of the choice of the cervical or corporeal incision is, however, one for future experience to decide.

This new edition tends to confirm the very favourable opinion we formed of this book on its first appearance, and we can cordially recommend it to students and practitioners.

Forme Inibitorie di Guerra e Isterismo. By Professor SILVIO RICCA. With 33 illustrations. Milan: Soc. Edit. Libraria. 1919. Pp. 174. L. 8.

THIS practical little volume, which might be usefully translated into English, deals with those impairments of the functional activity of injured limbs which were called by Babinski reflex and physiopathic disturbances. There are two directly opposite schools of the psychogeny of these cases—that of Neri who attributes them to simulation pure and simple, and that of Roussy who maintains an hysterical interpretation. Between these conflicting explanations there is much diversity of opinion, according as vaso-motor disturbances and psychopathic influences come into play. The author considers that this kind of functional disability differs in many respects from what is called pithiatism, which is a morbid psychic condition followed as an immediate consequence by motor disturbance. There may be types, which arise suddenly, of psychogenic origin, but these are a minority. In many other cases, however, it is the wound itself, or the treatment of it, which constitutes the initial phenomenon, especially the immobility in which a limb has been kept. In fact, prolongation of immobility, or a tonic contraction, or a faulty attitude, produces in time serious functional results. The state of mind of the patient is intimately connected with efficacious treatment. Professor Ricca obtained brilliant results at the Physicotherapeutic Institute at Rapallo. He does not employ any physical treatment such as electricity, &c., or suggestive treatment, either direct or indirect, but limits himself solely to exercises for the affected limb, arranged in such a way as to compel the patient to apply them. This, combined with therapeutic discipline, is the essence of the treatment. Thus in dropped foot the inhibited muscles are made to act by passive movements applied with various degrees of rapidity and by making the patient walk with a stamping action. Dropped wrist is treated by ordering forcible flexion of the fingers, producing by association hyperflexion of the hand and by flexing the forearm against resistance while keeping the hand passively extended. The disciplinary measures consist in infusing into the mind of the patient that the disability must get well, in demonstrating the cure of similar cases among the other patients, and by a system of rewards and punishments. The various phenomena of functional disabilities are described and discussed at length, and illustrated by typical photographic representation of these conditions. Rigidity, muscular atrophy, trophic skin changes, vaso-motor disturbances, electrical excitability, and the reflexes, are among the chief secondary phenomena dealt with. Part II. of the book is devoted to psychogenic motor disturbances of volitional and automatic types, obsessions and emotional states with hysterism or pithiatism in elucidation of which the author follows more or less closely the conception of Babinski.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

1) INFLUENZA PROPHYLAXIS VACCINES; (2) APOTHESINE, A NEW LOCAL ANÆSTHETIC.

(PARKE, DAVIS AND CO., BEAK-STREET, REGENT-STREET, LONDON, W.1.)

(1) THESE vaccines are prepared in the inoculation department of St. Mary's Hospital. They are additional to the vaccines which have been prepared at that institution for some time—namely, those for the prophylaxis of nasal and bronchial catarrh. The new vaccines are as follows: (*a*) anti-influenza vaccine (*B. influenzæ*, *Pneumococcus* and *Streptococcus*) in the proportions prescribed by the War Office; (*b*) mixed influenza vaccine (Wynn's formula), containing the same organisms as (*a*), but in equal proportions, and (*c*) influenza pneumonia vaccine prophylactic (Rosenow's formula), containing *B. influenzæ*, *B. pneumoniæ* (Types I., II., III., and IV.), and also *Streptococcus hæmolyticus* and *Staphylococcus*.

(2) Apothesine represents an attempt to supplant cocaine and its derivatives with the view of providing a powerful local anæsthetic free from the toxic and other disadvantages of that alkaloid. It is described chemically to be the hydrochloride of gamma-di-ethyl-amino-propyl cinnamate, and is therefore not a derivative of cocaine. Apothesine is soluble in water, and the solution may be sterilised by boiling without decomposition of the salt. Its mode of employment for producing local anæsthesia prior to surgical and dental operations is described.

DIABETIC SOLAC.

(SOLAC, LTD., 221, TOTTENHAM COURT-ROAD, LONDON, W.)

This preparation, in the form of a soft cream-coloured powder, is described as a synthetic milk specially made free from sugar for diabetic patients. It readily forms a milk-like emulsion when mixed with water, which tastes not unlike milk and can be used as a substitute for that fluid. Its special food value is obvious, since we found it to contain 51·97 per cent. of fat and 12·80 per cent. of protein. It is not only entirely free from sugar but contains, according to our analysis, no sugar-producing materials in the form of carbohydrate. Moisture was present to the extent of 0·90 and the mineral matter was 4·00 per cent. Other materials present were neutral emulsifying agents. The preparation was brought to our notice by a medical man suffering from diabetes, who states he has derived distinct benefit from its use.

SUBITOL.

(CHAS. ZIMMERMANN AND CO. (CHEMICALS), LTD., 9 AND 10, ST. MARY-AT-HILL, LONDON, E.C.3.)

According to our examination subitol is identical with Tyrolese ichthyol, and consists of ammonium sulphonate with sulphur in organic combination (sulphidic sulphur). Its antiseptic, antiparasitic properties have been well established, and it is also an anodyne. Numerous reports speak in its favour as an application externally in eczema and other skin diseases, and internally it has been used in gastro-intestinal catarrh. It is a viscous brown fluid, which is miscible with water and also glycerine. It responds to the tests for sulphidic sulphur. Subitol may be obtained in capsules, and subitol preparations include an ointment and a soap.

OSMOS APERIENT WATER.

(OSMOS, CROWN WHARF, HAYES, MIDDLESEX.)

The chief claim in regard to this water is that its composition and osmotic properties are identical with those of a well-known Hungarian natural bitter aperient water. We append our own analysis of Osmos, placed side by side with an analysis also made by ourselves some years ago of the Hungarian water referred to. The results are given in grammes of salts per litre of water:—

	Osmos.	Hungarian aperient water.
Magnesium sulphate	18·60	18·22
Sodium sulphate	17·00	17·14
Sodium chloride...	1·75	1·52
Sodium carbonate	0·15	0·91
Specific gravity	1036	1036

The figures show a practically identical composition and specific gravity, and the therapeutic effects may be regarded to be the same, leaving out of consideration the question of the action of rare constituents or of the possible radio-activity of natural waters. It should be a good aperient saline, laxative or purgative according to dose.

SANATOGEN CHOCOLATE.

(GENATOSAN, LTD., 12, CHENIES-STREET, LONDON, W.C.)

We examined a specimen of ordinary chocolate for its protein value and the result was 5·35 per cent. Similarly examined, sanatogen chocolate gave 12·95 per cent. of protein. The addition of a protein substance is therefore confirmed, and as this carries in with it an organic phosphorus combination the nutritive value of the chocolate is clearly enhanced.

THE LANCET.

LONDON: SATURDAY, OCTOBER 4, 1919.

"Strike, but Hear Us."

THE precipitate strike of the railway men has hit all classes so hard that on every side reasonable voices can be raised to point out that in some way or other the blow is being felt with a more intense effect than anywhere else by one or another particular section of the community. We make bold to believe that on no section of the community can the strike be conceivably falling harder than on the sick. The breakdown of all intercommunication, save that dependent upon the motor, and to a negligible degree upon the horse, between outlying parts of large cities, as well as between urban centres and rural constituencies, has deprived the sick at a moment's notice of prompt medical attention and of all the advantages that are to be got from consultation. The hospitals are sharing in the huge dislocation of business, while the supply of remedies and medical material is seriously jeopardised. Private patients in the first instance will perhaps suffer more than hospital patients, but undoubtedly those who have to-day the heaviest cross to bear are the sick. When the general needs of the population in respect to food-supply have been met by the vigorous measures that are now being undertaken, we hope that the next step will take into consideration, in a special way, the needs of the sick. Those who may be found to support the strike on its merits, and that smaller body who may be found as advocates of its methods also, are, we are certain, as grieved at heart as any of us, while they appreciate the terrible addition that has accrued to the misery of all that are sick. From their beds, oblivious of arguable questions pertaining to the rights of man, the sick plead the rights of the sick, saying, in parody of THEMISTOCLES, "Strike, but Hear Us."

It is well that there is no need to say more about so obvious a situation; for if there were need it would be difficult for us to comply. With great reluctance we are compelled to reduce the size of the journal considerably this week, so that every line of space is needed. This has meant a ruthless suppression at the last moment of much that we had intended to print, as well as a large refusal of advertisements. We regret sincerely the necessity which has been forced upon us of such an inhospitable reception of valuable support from both sides, trusting that further continuance of these painful tactics will be swiftly rendered unnecessary.

The Consultative Councils of the Ministry of Health.

WE publish in another column a communication from the Ministry of Health in which are set out the names of those who have been selected to form certain of the Consultative Councils established under the Ministry of Health to be advisers to the Ministry upon practical points arising in various directions. In each case there is added to the names a few words of description which supply the reason for the inclusion of the woman or the man in the lists, and the probability is that most of our readers will endorse the general view that the choices have been dictated by discrimination. In considering the make-up of the Committees, however, it will be necessary to remember that, while the function of these bodies is advisory, there is no onus whatever upon the Minister to take the proffered advice. The Minister will have his own policy and the policy of his party to consider, and the extent to which he avails himself of expert counsel is entirely at his discretion.

To the Consultative Council on Medical and Allied Services there will be referred, as might be expected, such problems as "the national development and extension of medical work, including midwifery and nursing," and it is proposed that the Council should act through committees more specialised than itself, these bodies being formed, if necessary, partly by members of the Council and partly by "persons not members of the Council who have devoted themselves specially to the study of nursing and midwifery questions." This is a judicious arrangement, analogous to that successfully used by county education committees, for securing the coöperation of those engaged in certain services ancillary to medicine, and if the recommendations of such mixed committees are treated with due respect there is every chance that both the public and the professional views as to what is right, as far as nursing and midwifery are concerned, will receive due attention. But we see no suggestion that the Consultative Council is not considered perfectly adequate to represent the best views on "the national development and extension of medical work," which is rightly placed in the forefront of the advisory business of the Council, and it is exactly here that we have our doubts. The Council is well constituted under a chairman, Sir BERTRAND DAWSON, of deserved repute, both as a practical man and an idealist; and its individual members are persons of experience along their different lines. But it cannot conceivably be called representative. If a difference of opinion upon "the national development and extension of medical work" should take place what will the Ministry of Health do? As the position is outlined by Order in Council it would seem that the Ministry of Health will then take its own course, which may not be the course which enlightened medical opinion would recommend, or the course which would be good for the public. And, in the long run, what is best for medicine is best for the public. It is clearly designed that there should be a resultant of forces in doubtful cases by pooling the advice of the Council on Medical and Allied Services with that given by the other Councils. The Consultative Councils on Local Health Administration and on National Health Insurance are to consider, respectively, "the administrative problems arising out of proposals for the development and extension of health services," and those arising "in the administration of the cash benefits (sickness, disablement, and maternity) by Approved Societies under the Insurance Acts." These Councils are composed of laymen, and their constitution is representative, so that we can well believe that what they have to say will be received with attention and respect by the Ministry of Health. But the principal executive officers of the work of the Ministry must be the doctors, and we can easily imagine either or both of the non-medical Councils giving advice to the Ministry which would not tend to fair action towards the medical profession at large.

Then it might be expected that the Consultative Council on Medical and Allied Services would step in, but it is just then that the Council would be likely to disagree, because no common attitude on many public questions has yet been assumed by the medical profession.

It is here, we think, that the newly formed body, the British Federation of Medical and Allied Societies, may have a great opportunity, if it obtains support. It is too early yet to prophecy whether this support will be given to it, but it has received a highly encouraging send-off; and inasmuch as its severer judges appear to concentrate most upon its faults of birth and least upon the wisdom of its intentions, we may regard their criticism as beside all practical point. Only those who can find no better reason for abuse allude perpetually to the defective birth of an antagonist—and a good many bastards have turned the course of the world. If the Federation, which has the good-will of many members of the British Medical Association, and promises of affiliation from a large group of bodies, medical and ancillary to medicine, can provide at this juncture a round table where some common views as to many vexed questions would be arrived at, its usefulness when the Consultative Councils of the Ministry of Health were at variance might be very real. The Federation must be judged by its fruits; we suggest that it should be assisted to bear them.

The Place of Cardiac Massage.

FOR many years cardiac massage has held a place as a means of resuscitation, although one of limited application and small success. One of the earliest successful cases was reported[1] to the Society of Anæsthetists in 1902 by Dr. E. A. STARLING, who was giving the anæsthetic, and Mr. W. A. LANE, who was operating. Dr. T. A. GREEN summarised the results of 40 published cases in our own columns[2] in 1906. MOLLISON[3] narrated a case of recovery after heart failure during operation for tonsils and adenoids, cardiac massage being performed through an abdominal incision and after the heart had apparently ceased beating for not less than 13 minutes. Quite recently ASHLEY DALY, LLEWELYN POWELL, and F. E. SHIPWAY, have reported successful cases,[4] while Dr. BOST and Dr. NEAVE[5] have published the technique employed with success after 25 minutes of absolute cessation. In an article which appears this week in our original columns Mr. LIONEL NORBURY again draws together some of the scattered threads in a way which will be of help both to operating surgeons and to anæsthetists. Fortunately, the number of cases requiring resuscitation is diminishing, a result which may be attributed to the more careful choice of anæsthetic in relation to the particular patient. A mixture of gas and oxygen has been increasingly used in cases of severe shock and of nerve blocking in appropriate cases. Doubtless increasing skill on the part of the administrator and gentleness on the part of the surgeon have had their due effect. In 1911 276 deaths under anæsthetics were reported. Dr. J. F. W. SILK, in his position as consulting anæsthetist to the War Office, had cognisance of only 136 fatal cases occurring in military hospitals throughout England, Scotland, and Ireland during the two years 1917 and 1918. But the spectre of sudden death under an anæsthetic is by no means yet banished, and Mr. NORBURY'S paper is welcome in directing further attention to what may be the only treatment which can save the patient's life in certain cases of heart failure during anæsthesia. Whether heart failure is often due to an overdose of anæsthetic is still undecided. A light or irregular depth of anæsthesia certainly accounts for some of the casualties. The experimental work of SCHIFF and CRILE was confined to animals suffering either from an overdose or from asphyxia, and their conclusions do not necessarily apply to the syncope more commonly encountered by the anæsthetist—namely, that due to ventricular fibrillation.

A word may be in place regarding the position of adrenalin in anæsthetic syncope. Rhinologists have long realised that adrenalin injections are dangerous when associated with chloroform. Dr. J. BLOMFIELD[6] reported in 1911 an alarming case of heart failure after adrenalin injection with chloroform, and at the same meeting of the Section of Anæsthetics of the Royal Society of Medicine two fatalities under similar conditions were referred to. The experiments of Dr. A. GOODMAN LEVY[7] on cats showed under comparable conditions multiple extra-systolic tachycardia developing with light anæsthesia, and always ending fatally with ventricular fibrillation. Chloroform is not a popular anæsthetic in the United States, a fact which accounts for CRILE'S omission to give a warning against the use of adrenalin. Since the object of giving adrenalin is the increase of blood pressure it can, at least, be of only problematical good when the heart is not acting at all. Turning to the routine treatment of anæsthetic syncope, Mr. NORBURY rightly deprecates the waste of valuable time in the administration of drugs. The patient's head should be lowered, the tongue drawn forward, the patency of the air-passages assured, and artificial respiration performed. If these measures are not successful in two minutes heart massage should be, in his opinion, resorted to, artificial respiration being continued.

All the reported cases of success add weight to the maxim, never to give up a case of apparent death under an anæsthetic as hopeless until cardiac massage and its various accessories have been given a fair trial. Heart massage acts mechanically by re-establishing the coronary circulation and must be accompanied by artificial respiration, for, in the words of CRILE, "In order to restore the apparently dead, not only must the heart be made to beat, but the respiration must be re-established and the vaso-motor centres stimulated into renewed activity." Mr. NORBURY describes the means of access for the performance of cardiac massage: the subdiaphragmatic, the transdiaphragmatic, and the thoracic route. His preference is for the first, and that is the method employed by him in his own cases. The chief difficulty really lies in coming to the decision that the heart will not recover without some desperate measure. Timidity and inexperience may suggest after the event, that recovery might have followed had the abdomen not been opened. But skilled operators and anæsthetists can detect with certainty the suspension of the heart's action, and in the light of accumulating evidence heart massage will be applied more frequently as an immediate measure.

[1] THE LANCET, 1902, ii., 1397. [2] THE LANCET, 1906, ii., 1709.
[3] Proc. Roy. Soc. Med., Nov. 3rd, 1916. [4] Ibid., June, 1919.
[5] Indian Med. Journ., February, 1919.
[6] Proc. Roy. Soc. Med., Feb. 3rd, 1911.
[7] Proc. Phys. Soc., Jan. 21st and Oct. 21st, 1911, and Brit. Med. Jour., Sept. 14th, 1912.

In the case of an abdominal operation the sub-diaphragmatic massage can be practised at once, otherwise the abdomen should be opened. BOST and NEAVE[8] go further, and urge, should the heart remain unresponsive, incision of the diaphragm, after which the hand is pushed into the thoracic cavity anterior to the pericardium and the base of the heart massaged, since little air can enter the chest by the technique suggested, and in view of the fact that pneumothorax has been shown by war-time experience not to be as serious as it was formerly considered, perhaps even this direct massage should become a routine measure when all else has unavailed.

Annotations.

"Ne quid nimis."

THE RED CROSS: PAST AND FUTURE.

THE Great Peace has brought together friendly rivals as well as enemies, and the British Red Cross Society is henceforward to work hand-in-hand with the Order of St. John of Jerusalem in furtherance of aims which have always been largely identical. The announcement of this working agreement by Sir Arthur Stanley, as chairman of the Joint War Committee of the two corporations, has almost coincided with the death of Sir John Furley, the father of the Red Cross movement in this country. He it was who in 1868 advocated the establishment of a British branch of the International Red Cross, and on the outbreak of the Franco-German War went to Geneva to intimate its successful formation. Thereafter he was to be found on nearly every European battlefield. Sir Arthur Stanley states the intention of the combined corporation to undertake the work contemplated in Article 25 of the Covenant of the League of Nations, which runs:

"The members of the League agree to encourage and promote the establishment and coöperation of duly authorised voluntary national Red Cross organisations having as purposes the improvement of health, the prevention of disease, and the mitigation of suffering throughout the world."

And he goes on to indicate what are the urgent matters which the Joint Council of the Red Cross desires to bring before the notice of its constituent county committees. Put briefly these are: care of sick and wounded; care of prisoners; tuberculosis; child welfare; hospital garments; hospital libraries; home ambulance.

At the same time the League of Red Cross Societies is completing its arrangements, its headquarters having been transferred from Paris to 9, Cour de St. Pierre, Geneva. The appointment of Dr. Leonard Findlay to be head of the Department of Child Welfare augurs well for the direction of this work with enthusiasm tempered with judgment. Appointments to the other departments are pending. The Mission to Poland, on which Dr. G. S. Buchanan was British representative, has returned with the outline of a comprehensive scheme of relief.

This civilian side of Red Cross effort is not so new as many suppose. In 1846, when he was but 18 years old, Henri Dunant wrote:—

"I then learned to know misfortune and misery face to face, in dark alleys, in houses more like stalls than dwellings, among men who could call nothing their own save a chain of untold suffering .....; then it was that I first realised the impotence of the individual in the face of overpowering misfortune and the need for the whole of humanity to range itself against these dim forms of darkness."

In 1863 he suggested the use of Red Cross resources in epidemics and disasters such as floods or fires, and at the International Conference of 1869 the principle was accepted of employing the Croix-Rouge for "works of humanity" corresponding to its specific war functions. The principle became, perhaps, better known in Russia than in any other country, where, in the disasters of 1897–8, the bearer of the Croix-Rouge under the patronage of the Empress Marie earned the endearing name of "Krestovik." Nothing but activity of this kind could have kept the Red Cross before men's eyes in the long fruitful intervals of peace, and now that war is a discredited anachronism some permanent outlet is required for the generous enthusiasm which mobilised countless thousands of voluntary workers from home and comfort. Under the Red Cross as conceived by Henri Dunant, inaugurated by John Furley, and organised by Arthur Stanley, there is room for all workers who combine a keen and generous spirit with any kind of physical qualification.

[8] Loc. cit.

THE VISION OF SIGNALMEN AT SEA.

IN a paper read before the American Ophthalmological Society[1] Dr. Alexander Duane makes some important observations, based upon his personal experience during the war, on the visual requirements of a signalman on the bridge of a United States warship. The work is exceedingly difficult and complicated, and needs, in the first place, a man of decided nervous and mental stability. The ocular requirements for a candidate for signal work should always be considered in connexion with his other physical and mental qualifications, and to a certain extent should vary with these. As to the ocular requirements, perfect colour sense is indispensable, and so is a first-rate light sense, without which the interpretation of many signals in bad weather or against a feebly contrasted background would be impossible. Equally important is a quick reaction time. Visual acuity must, of course, be good, but perfection in this is not so essential as are the first three requirements. The wearing of glasses in such an employment, though distinctly inconvenient, should be allowed to candidates who are otherwise suitable, but their disadvantages must be admitted. They produce disturbing reflections, while they readily become dimmed with moisture or marked with grease, and even when clean, apparently cut off enough light to make the recognition of distant objects more difficult. Duane's own vision was improved with glasses by the ordinary test from 20/40 to 20/20. Yet under nearly all conditions of distant vision he could make out far-away flags, semaphore signals, &c., almost, if not quite, as well without his glasses as with them. In spite of this he would not necessarily disqualify candidates with fairly good distant vision who require glasses to bring it up to the normal. Of 100 men who besides himself served from time to time as signalmen on the bridge, five besides himself wore glasses. Even a myope had signalling ability which was all that could be desired, and a man with mixed astigmatism of two or three diopters was one of the best receivers on the bridge. We commend this paper as the result of a happy union of practical experience with

[1] American Journal of Ophthalmology, August, 1919.

scientific knowledge. It points the way to the definition of visual requirements of other employments in accordance with the special conditions of each.

PANNICULITIS.

ACCORDING to Dr. Frank A. Cummings,[1] of Providence, R.I., panniculitis is a common condition characterised by soreness, œdema, and sclerosis of the superficial layer of fat. On palpation sharp pain is produced by slight pressure and nodular masses are to be found in the skin. The condition occurs more frequently in the female and involves larger areas in obese patients, though it is not confined to them. It is slowly progressive and without acute subjective symptoms. Cummings found that in all his cases the predominant factor was gastro-intestinal disturbances, such as habitual constipation, often of the spastic type. There could also usually be found a diminished supply of oxidising agents such as is furnished by the endocrine glands. The patient usually complains of fatigue and loss of vitality. Headache of the migraine type is very common. He is often very nervous and at times depressed, and complains of soreness in various parts of the body. Treatment consists in massage, which should be limited to frequent short periods such as half an hour three times a week, regulation of the diet, especially reduction of the carbohydrates to a minimum, and increase of elimination and oxidation.

"THE UNIVERSITY OF UTOPIA."

IN this week of the year we usually publish many introductory addresses delivered by leaders of medicine or others at the opening of the various medical schools. We announced last week the metropolitan programme for such functions, and, owing to the strike, we issue this week a notice of their abandonment in most cases. But the medical schools will open as usual. The long quotation which follows is made, by permission, from a privately printed address delivered under the title, "The University of Utopia," before the University of Malta by Sir Archibald Garrod, and as the new Director of Medical Studies at St. Bartholomew's Hospital will have one of the most responsible educational posts in medicine both to create and to develop, our readers will certainly appreciate his eloquent ideal of what university teaching may accomplish and imply:—

> The teacher who has a radio-active mind, and moves naturally upon a higher plane of thought, beckons his pupils up to his level, and reveals to them untold possibilities in subjects which in other hands are dull and uninspiring. He stimulates them to investigate for themselves, and directs their early footsteps on the path of research.
>
> Hardly less is the influence of students upon each other, either for good or evil. They also learn from contact with minds and characters of other types, and this mutual influence is exerted in the playing field as well as around the study fire. It has its greatest scope in the residential university, within whose precincts the students live in a community under collegiate discipline, kneel together in the college chapel, and dine together in its hall. Nowadays such residential universities survive only in the British Isles and in America. Long may they flourish, and may the efforts of would-be reformers pass them by, for of all universities they make the nearest approach to the ideal.
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> We know that a man's feeling towards his university, if no more loyal than that which he entertains towards his school, is of a different quality. For her alone he reserves the name of *alma mater*.
>
> Within her walls he enjoys a liberty such as he has not known before. It is well for him if he learns self-reliance, tempered by the sense of responsibility. Otherwise it may be his lot to look back upon his student days with regret for wasted opportunities, or even with remorse for time ill-spent. University methods afford more scope for individual temperaments and bents than do school methods. Within defined limits the student is free to select the line of study for which he has most aptitude and inclination. Minds of all shapes and calibres are no longer forced into the same mould, and individuality has fair play. It is obvious to the most superficial glance that no two individuals are alike, but there are many differences in modes of thought and types of mind which escape any but meticulous observation.
>
> I, for one, believe that at an early age the process of "taking the nonsense out of him," to which a boy is subjected at school, is, if not carried too far, a beneficial one. It is a rough-and-ready training in citizenship, and saves many a man from incurring the stigma of the prig or bore. But the "nonsense" should only be scotched, not killed, for disciplined by school experiences it develops in later life into healthy independence, originality, or even genius.
>
> In every existing university there are teachers who fail to quicken their hearers, and students who neglect their opportunities, who abuse their new-found liberties and influence their fellows to their harm. For such students it is not the business of the university to provide, although she is bound to exercise a disciplinary control, to admonish and even to punish when necessary. She can only welcome to her doors those who come to learn and not to idle, nor can she lower her standards to the level of the latter class. At matriculation she demands evidence of good conduct in the past, and of a certain level of general education. She holds out her hand to help those who fail to keep pace with the crowd, and encourages those who possess exceptional talents. In the end she grants her degrees to all who have utilised their opportunities reasonably well, and awards honours to outstanding merit. All this is incumbent upon her, but in reality she does much more towards moulding characters as well as minds. He who emerges from his undergraduate days without a changed outlook upon life, and a more mature grip of its obligations and responsibilities, has failed to avail himself of the gifts placed within his reach.

PANEL PRACTICE AND INSURED PERSONS.

NOT long ago an article in a daily newspaper, claiming to be from the pen of a medical practitioner, urged upon the insured section of the public and their employers the desirability of forming themselves into leagues or associations having for their objects the improvement of the medical service provided by the National Insurance Acts. There is, no doubt, useful work that such bodies, guided by intelligent and industrious committees, might reasonably do, but there would always be a danger of their developing into merely destructive critics of alleged defects of panel practice in their immediate vicinity, and of their taking no hand in the constructive and amending alterations which the present system requires. For nearly five years the war disorganised medical practice throughout the country, redistributed the civil population in recognised centres of industry, besides removing a huge number of workers to reinforce our armies, and creating new industrial areas where none existed before. All this occurred about three years too late to delay the inception of the scheme, and too soon for complicated innovations, or for the consideration and correction of defects.

At the present time the industrial world is itself undergoing reconstruction, and, let us hope, amendment and improvement. Peace has, however, brought a cessation of hostilities indeed, but not as yet a return to anything like conditions of

[1] Boston Medical and Surgical Journal, 1917, clxxxi, 236-7.

a stable or normal character. We do not propose to enumerate the points at which associations of insured patients, combining with the employers, might best make their influence felt, but we are inclined to think that it will be some time before such associations would be able to agree even as to their general policy. It will be even longer before the insured will find themselves unanimous as to the application of that policy to problems the difficulty of which has been shown by experience. Public attention, for example, focusses itself at times upon instances of practitioners who, it is asserted, have lists so long that they are not able to give proper attention to individual patients. Such practitioners naturally avoid visiting the sick in their homes unless satisfied that it is absolutely necessary, and when they are compelled to do so their patients waiting at their surgeries suffer undeservedly. The cutting down of these congested lists is readily advised by the cursory critic, but when a "league" of panel patients comes to consider the point, it will soon realise that if it supports or calls for legislation that will remove from the list of a particular doctor a thousand of his patients, it will at the same time be taking steps to deprive a corresponding number of insured persons of their chosen doctor. Moreover, if the imagined association be popular and well supported, without which it will be useless, a large proportion of the persons to be directly affected will be its own members, who will probably have something to say in the matter. Nevertheless, in spite of practical difficulties of organisation and selection of policy to be overcome, the scheme has much to recommend it. A combination which would bring employers and the insured into co-operation with the medical profession as to some of the points upon which they are likely to be in agreement might be a very useful one.

GENITAL DEFECTS IN RECRUITS.

Captain Albert E. Mowry,[1] professor of genito-urinary and venereal diseases at the Chicago Hospital College of Medicine, examined 10,000 recruits for genital defects with the following results. Approximately 2100 cases, or more than 20 per cent., showed phimosis. In several hundred there was a manifest under development of the penis due to tightness of the foreskin. Balanoposthitis was often present and the retained smegma was extremely offensive. Many of the cases had ulceration and usually inguinal adenitis. Hypospadias was surprisingly frequent, being met with in 200 cases, though most of them were of a slight degree. Pituitary disturbances were also much more numerous than had been anticipated. The great majority of these were of the pendulous abdomen and small genitalia type. Cases with distinctive feminine features were very few in number, about six all told. Practically all cases of disturbed pituitary function were rejected. Over 100 cases of undescended testicle or testicles were seen, or more than 1 per cent. of all examined. The right testicle was most often involved, and the general health in this type was, as a rule, much below par, especially in cases with bilateral involvement. Captain Mowry suggests that this may be due to lessened testicular secretion due to pressure atrophy or to a possible malignant tendency. Only six instances of sexual perversion were found and, like drug addicts, were promptly rejected as unfit. Forty self-styled masturbators were in evidence. They were mostly of the neurotic type, but were usually accepted if they possessed other requirements. Nocturnal enuresis was encountered in some 20 cases, or 0·2 per cent. If genuine, these cases were discharged, as the condition would be a serious handicap in many ways. A few cases of spasmodic incontinence were noted, but were mostly malingerers. Syphilitic orchitis was found in 8 cases, tuberculous epididymitis in 11 cases, seminal vesiculitis in 14 cases, and what appeared to be teratoma of the testis in 4 cases. Atrophy of the testes was observed in 40 cases after mumps and in 12 out of 30 cases that had been operated on for varicocele. Hydrocele was found in 19 cases, left-sided varicocele in 2100 and right-sided in 200 cases, most of them being of an insignificant type.

[1] The Urologic and Cutaneous Review, 1919, xxiii., 529-30.

THE Harveian Society of London is one of our oldest metropolitan medical societies, Dr. Anthony Todd Thomson and Dr. Marshall Hall, its first presidents, having served in 1831 and 1832 respectively. Meetings continued to be held regularly in the early years of the war, but in 1917 the society suffered an almost complete but temporary eclipse, for a bomb fell at the corner of Titchborne-street and Edgware-road, completely wrecking the rooms in which its meetings were held. Subsequently a few meetings were held at St. Mary's Hospital. The society hopes now to resume its activities. Dr. James Taylor is the president, and meetings will be held, provisionally, in the rooms of the Medical Society of London, at 11, Chandos-street, Cavendish-square. Sir Berkeley Moynihan will open the session on Thursday, Oct. 23rd, at 8.45 P.M., with an address on the Diagnosis and Treatment of Gastric Ulcer, to which all medical practitioners are invited. Sir Thomas Horder will deliver the Harveian Lecture of the Society on a Thursday evening in March to be announced later. A full programme for the rest of the session is being prepared.

THE LISTER MEMORIAL TABLETS.—At University College, Gower-street, London, on Nov. 11th, at 5 P.M., the Lister Memorial Tablets will be unveiled by the President of the Royal College of Surgeons of England, Sir George H. Makins, and by the President of the Royal Society, Sir Joseph Thomson, O.M., Master of Trinity College, Cambridge.

OUTBREAK OF DYSENTERY IN HAYES URBAN DISTRICT.—An outbreak of bacillary dysentery is at present in progress in the urban district of Hayes, in the county of Middlesex. There have already been over 30 cases, persons of all ages, including infants and those over 60 years, having been attacked. The mortality has unfortunately been very high, not fewer than 10 deaths, chiefly among children, having been attributed to the disease. The diagnosis of dysentery has been confirmed by bacteriological investigation of the discharges from the bowel, and Shiga's bacillus has been isolated. The onset in most of the cases is sudden and is accompanied by slight elevation of temperature and abdominal pain, followed by diarrhœa with blood-stained and mucous stools. The duration of the malady varies from a few days to several weeks. The cause of the outbreak, which is being investigated by a medical officer of the Ministry of Health, has, we understand, not yet been definitely established. But the country is at present peculiarly liable to the prevalence of dysentery on account of the large number of recently demobilised soldiers who suffered from one or other form of the malady whilst on active service. The high mortality resulting from the disease in the Hayes urban district demonstrates the importance of careful diagnosis in all cases of illness associated with diarrhœa in order that measures for the prevention of spread of the disease may be undertaken at the earliest possible moment whenever dysentery is in question.

THE MINISTRY OF HEALTH:
CONSULTATIVE COUNCILS.

THE Ministry of Health announces: When the Ministry of Health Bill was before Parliament it was made clear that the Ministry when established would seek advice on a variety of subjects within its province from advisory bodies chosen so as to include men and women with full practical knowledge of the questions on which they would be asked to advise. These bodies are called in the Act Consultative Councils, and their constitution and functions will be found in the Order in Council of August 18th, 1919. In the case of England they will be four in number, and will consist of the Consultative Council on Medical and Allied Services, the Consultative Council on National Health Insurance, the Consultative Council on Local Health Administration, and the Consultative Council on General Health Questions. The Secretary will be Mr. Michael Heseltine, C.B., Ministry of Health, Whitehall, S.W. 1. The Councils will consist of 20 members each, including a chairman and vice-chairman, but they may for special purposes appoint committees on which other persons may be co-opted, so that particular problems will be considered with the help of those who have made them a special study.

The membership of the Consultative Council on General Health Questions, which will also be 20 in number, is not yet completely settled, but at least half of its members will be women.

CONSULTATIVE COUNCIL ON MEDICAL AND ALLIED SERVICES.

To this Council will be referred such problems as the national development and extension of medical, nursing, and midwifery work, and it is proposed that for some purposes it should, in accordance with the arrangement outlined above, act through committees more specialised than the Council itself. Its members have been chosen from the fields of specialist medicine and surgery, general practice (both private and insurance), the public health services, the work of women in medicine (particularly the care of mothers and infants), hospital administration, and the application of other branches of science to medicine.

It is intended that when questions are under consideration that specially affect the nursing and midwifery services of the country the Council should be assisted by the appointment of a committee consisting partly of its own members, but also including practising nurses and midwives and other persons not members of the Council who have devoted themselves specially to the study of nursing and midwifery questions.

The Council will consist of the following:—

Chairman.—Sir Bertrand Dawson, G.C.V.O., C.B., M.D., F.R.C.P., Physician to the London Hospital; Dean of the Faculty of Medicine, University of London.

Vice-Chairman.—Colonel C. J. Bond, C.M.G., F.R.C.S., F.L.S., Honorary Consulting Surgeon to the Leicester Infirmary; Member of the Medical Research Committee of the Ministry of Health.

Norman G. Bennett, Esq., M.A., M.B., B.Ch., L.D.S. Eng., Dental Surgeon to the Royal Dental Hospital and to St. George's Hospital, London; Chairman of the Representative Board of the British Dental Association.

R. A. Bolam, Esq., M.D., B.S., M.R.C.P., Honorary Physician to the Skin Department, Royal Victoria Infirmary, Newcastle-on-Tyne; Professor of Medical Jurisprudence in the University of Durham.

Victor Bonney, Esq., M.D., B.Sc., M.S., F.R.C.S., Assistant Obstetric and Gynæcological Surgeon to the Middlesex Hospital; Surgeon to the Chelsea Hospital for Women.

T. Eustace Hill, Esq., O.B.E., M.B., C.M., B.Sc., Medical Officer of Health and School Medical Officer for the County of Durham; Medical Adviser to the Durham Insurance Committee; Professor of Hygiene and Public Health in the University of Durham.

F. Gowland Hopkins, Esq., M.A., D.Sc., F.R.S., F.R.C.P., Professor of Biochemistry in the University of Cambridge; Official Analyst to the Home Office; Representative for Cambridge University on the General Medical Council; Member of the Medical Research Committee of the Ministry of Health.

Miss M. H. F. Ivens, M.B., M.S., Honorary Medical Officer for Diseases of Women to the Stanley Hospital and Honorary Surgeon to the Samaritan Hospital, Liverpool; former President of the Northern Association of Medical Women.

Miss Janet E. Lane-Claypon, M.D., B.S., B.Sc., Dean and Lecturer on Hygiene of the King's College for Women, London.

A. Linnell, Esq., M.R.C.S., Chairman of the Insurance Committee and Secretary of the Panel Committee for Northamptonshire.

H. G. Dain, Esq., M.B., M.R.C.S., L.R.C.P., Chairman of the Insurance Committee and Chairman of the Panel Committee of the City of Birmingham.

A. Fulton, Esq., M.B., B.Ch., Vice-Chairman of the City of Nottingham Health Committee; Chairman of the Nottingham Insurance Committee.

Sir William S. Glyn-Jones, Secretary and Registrar of the Pharmaceutical Society of Great Britain; Alderman of the Middlesex County Council; formerly Chairman of the Middlesex Insurance Committee.

T. A. Goodfellow, Esq., M.D., B.Sc., M.R.C.S., L.R.C.P., Member of the Insurance Committee for the City of Manchester; Chairman of the Manchester Local Medical and Panel Committees.

G. E. Haslip, Esq., M.D., D.P.H., M.R.C.S., L.R.C.P., Treasurer of the British Medical Association, and former President of the Metropolitan Counties Branch of the Association.

J. A. Macdonald, Esq., M.D., LL.D., M.Ch., Honorary Physician to the Taunton and Somerset Hospital; direct Medical Representative for England on the General Medical Council; Chairman of Council of the British Medical Association.

E. W. Morris, Esq., Secretary of the London Hospital, Whitechapel, E.

John Robertson, Esq., C.M.G., O.B.E., M.D., M.B., B.Sc., Medical Officer of Health for the City of Birmingham; former President of the Society of Medical Officers of Health.

T. W. Shore, Esq., M.D., M.R.C.S., L.R.C.P., B.Sc., Dean of the Medical School and Lecturer on Comparative Anatomy and Biology to St. Bartholomew's Hospital.

Sir William A. Tilden, D.Sc., F.R.S., LL.D., Emeritus Professor in the Imperial College of Science and Technology; formerly Dean and Professor of Chemistry of the Royal College of Science, London.

CONSULTATIVE COUNCIL ON NATIONAL HEALTH INSURANCE.

This Council will, as its name indicates, consider problems of Approved Societies' work arising in the administration of the cash benefits (sickness, disablement, and maternity) by Approved Societies under the Insurance Acts. Its membership includes persons familiar with the work of all the principal types of Approved Societies and is as follows:—

Chairman.—T. Neill, Esq., J.P., Chairman of the National Amalgamated Approved Society.

Vice-Chairman.—The Rev. Canon F. C. Davies, Past Grand Master of the Manchester Unity; President-elect of the National Conference of Friendly Societies.

Francis Askew, Esq., J.P., Secretary of the United Ancient Order of Druids; Past President of the National Conference of Friendly Societies.

J. Badlay, Esq., Royal Liver Friendly Society.

F. W. Daniels, Esq., Secretary of the Ideal Benefit Society.

James Devonshire, Esq., Managing Director of Metropolitan Electric Tramways, London, and Suburban Traction Co., London United Tramways.

George Dew, Esq., J.P., Past Chairman of the Hearts of Oak Benefit Society; Parliamentary Agent for the National Conference of Friendly Societies.

A. P. Dixon, Esq., Secretary of the Eastern Counties Approved Societies and of the National Association of Approved Societies for the Eastern Counties.

Miss Florence, Secretary of the Women Clerks and Secretaries Friendly Society.

A. Henri, Esq., Secretary of the Liverpool Victoria Approved Society.

Henry Lesser, Esq., Secretary of the South Metropolitan Gas Company's Employees Provident Society, and President of the Federation of Employers Approved Society.

Miss Mary R. Macarthur, Secretary of the National Federation of Women Workers.

William Marlow, Esq., Secretary of the Ancient Order of Shepherds; Parliamentary Agent for the Ancient Order of Foresters; and Parliamentary Agent and Secretary of the National Conference of Friendly Societies.

R. J. Meller, Esq., Assistant Secretary of the Prudential Approved Societies.

W. F. Purdy, Esq., Executive Council of Ship Constructors and Shipwrights' Association.

P. Rockliff, Esq., Secretary of the New Tabernacle Approved Society; Secretary of the Joint Committee of Approved Societies.

Councillor J. H. Steele, J.P., President of the National Conference of Friendly Societies, 1918-1919; Treasurer, Sons of Temperance Approved Society.

The Rt. Hon. J. H. Thomas, M.P., Secretary of the National Union of Railwaymen.

C. Tuckfield, Esq., Secretary of the National Deposit Friendly Society.

G. H. Warne, Esq., Executive of the Northumberland and Durham Miners' Association.

CONSULTATIVE COUNCIL ON LOCAL HEALTH ADMINISTRATION.

This Council will consider the administrative problems arising out of proposals for the development and extension of health services, and its membership has been composed so as to include persons familiar with the work of local authorities of various types, the insurance committees, and the Poor-law guardians. The membership of the Council is as follows:—

Chairman.—Sir W. Ryland Adkins, M.P., J.P., Vice Chairman, Northamptonshire County Council.

Vice-Chairman.—W. T. Postlethwaite, Esq., LL.B., O.B.E., Clerk to the Swinton and Pendlebury Urban District Council; late Chairman of the Executive Council of the Association of Urban District Councils.

E. R. Abbott, Esq., Clerk to the Middlesex Insurance Committee.

J. R. Anderton, Esq., Chairman of the Public Health Committee of the London County Council.

Francis Bate, Esq., Chairman of the Berkshire Insurance Committee.

Miss Broadbent, Member of the Marylebone Board of Guardians; Chairman of the Marylebone Infirmary Committee; and Member of the Metropolitan Asylums Board.

A. B. Bryceson, Esq., Town Clerk of Woolwich.

Neville Chamberlain, Esq., M.P., late Lord Mayor of Birmingham.

Sir Harcourt E. Clare, Clerk of the Peace for Lancashire and Clerk to the Lancashire County Council.
Sir James Curtis, K.B.E., Clerk to the Guardians of the Birmingham Union.
Mrs. Dimsdale, Cambridgeshire County Council.
Sir Robert S. Fox, Town Clerk of Leeds.
Rev. R. V. O. Graves, J.P., Chairman of the Rural District Council of Maldon (Essex).
W. G. Hodgson, Esq., Clerk to the Liverpool Insurance Committee.
A. J. Lees, Esq., Secretary of the Urban and Rural District Councils Association.
Sir Charles Longmore, K.C.B., Clerk of the Peace; Clerk of the County Council and Clerk to Lieutenancy for Hertfordshire.
Sir William Middlebrook, M.P., late Lord Mayor of Leeds.
Sir Douglas Newton, K.B.E., Vice-Chairman, Cambridgeshire County Council.
R. B. Nicholson, Esq., O.B.E., Town Clerk of Lowestoft.
Lieut.-Col. Seymour Williams, Clerk of the Warmley Rural District Council; Chairman of the Executive Council of the Rural District Councils' Association.

WELSH CONSULTATIVE COUNCIL.

In the case of Wales there will be one Council consisting of 30 members. It will give advice and assistance in connexion with such matters as relate to National Health Insurance (Approved Societies' work), medical and allied services, local health administration, and general health questions in Wales and Monmouthshire. The members of the Council will be as follows:—

Chairman.—Sir Edgar R. Jones, K.B.E., M.P.
Vice-Chairman.—Sir Walter P. Nicholas, Clerk to the Rhondda Urban District Council.
Mrs. L. Andrews, Pentre, Rhondda Valley.
Mrs. Breese, Member of North Wales Nursing Association.
Miss Crowther, Inspectress under South Wales Nursing Association.
William David, Esq., J.P., Past High Ruler of the Independent Order of Rechabites.
Miss A. M. Davies, Honorary Secretary of the North Wales Nursing Association.
Idris Davies, Esq., J.P., Secretary of the Breconshire Association of Friendly Societies.
Mrs. F. Rose Davies, Member of the Aberdare Maternity Committee.
D. W. Evans, Esq., General Director of the Welsh National Memorial Association.
J. Harrison Evans, Esq., Divisional Manager of the Pearl Assurance Company.
Leolin Forestier-Walker, Esq., M.P., Member of the Monmouthshire County Council.
E. P. Harris, Esq., J.P., Member of the Pembrokeshire County Council.
Edward Harris, Esq., Clerk to the Swansea Rural District Council.
W. Harris, Esq., Secretary of the South Wales Labour Federation.
Lieut.-Col. D. Hepburn, C.M.G., V.D., M.D., C.M., Dean of the Faculty of Medicine, University College, Cardiff.
D. Rocyn Jones, Esq., M.B., C.M., D.P.H., County Medical Officer of Monmouthshire.
Hugh Jones, Esq., M.B., C.M., D.P.H., Chairman of the Merionethshire Panel Committee.
R. T. Jones, Esq., J.P., Secretary of the North Wales Quarrymen's Union.
Lee Joseph, Esq., M.P.S., J.P., Past President of the South Wales and Monmouthshire Pharmacists' Association.
F. Llewellyn-Jones, Esq., LL.B., Chairman of the Flintshire Insurance Committee.
Lady Ada Mather-Jackson, Member of the Priory for Wales of the Order of St. John of Jerusalem.
Lieut.-Col. Ewen J. Maclean, M.D., M.Ch., M.R.C.P. Lond., F.R.S. Edin., Honorary Gynæcologist, King Edward VII.'s Hospital, Cardiff.
J. W. Morris, Esq., Chairman of Merthyr Tydfil Insurance Committee.
E. Ll. Parry-Edwards, Esq., M.B., M.D., D.P.H., County Medical Officer of Carnarvonshire.
Ellis W. Roberts, Esq., Member of Carnarvonshire County Council.
Lawson Taylor, Esq., Town Clerk of Wrexham.
D. Lleufer Thomas, Esq., M.A., Chairman of Welsh Housing and Development Association.
W. E. Thomas, Esq., M.B., C.M., M.D., J.P., Chairman of Glamorganshire Panel Committee.
D. T. Williams, Esq., Ex-Chairman of the Rhymney Urban District Council, and Member of South Wales Miners' Federation.

Mr. Percy E. Watkins, Welsh Board of Health, City Hall, Cardiff, will be the secretary of the Welsh Consultative Council.

Sept. 26th, 1919.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Prevention of Influenza.

MANY valuable preventative measures are discussed in a memorandum by the Officiating Sanitary Commissioner to the United Provinces included in the annual report of the Sanitary Commission. It is claimed that the most that the Government of India could do as a practical measure in connexion with inoculation would be to maintain in its laboratories a sufficient supply of influenza vaccine to meet the wants of medical men in charge of such institutions as jails, schools, colleges, and so on, and of private practitioners who desire to use it in their practice. Sanitary measures, in the ordinary sense of terms, can have no effect on the spread of influenza, otherwise the disease would not spread in epidemic form in countries like England and America, where effective sanitary staffs are in both cases provided, and where efficient sanitary measures are, as far as possible, enforced. Influenza in India is more fatal, but this is not due to the fact that sanitary conditions are worse in India, but to the fact that economic conditions are worse. The people of India are worse housed, worse clothed, and worse fed, and can consequently offer less resistance to disease than those of England and America. The changes necessary for a decrease in the death-rate of influenza and other diseases in India depend on a change of economic conditions, and certainly not on the exertions of the sanitary staff. Reduction in mortality can, however, be effected in two ways—namely, by the general education of the people in elementary hygiene and by the institution of epidemic dispensaries capable of immediate and effective mobilisation when required in any district. These dispensaries need not be expensive, nor need they be provided with elaborate equipment, but each should contain a box of medicine to be supplied from a reserve store ordinarily maintained intact and reserved for use in epidemics at the district headquarters hospitals. District boards should be compelled to make provision in their budgets for the mobilisation of the "epidemic dispensaries," so that when the dispensaries are required for epidemics of plague, relapsing fever, or cholera, as well as influenza, the money to provide for their mobilisation and maintenance would be immediately available. The United Provinces Government, in a resolution on the sanitary report, remarks that "the best promise for countering future epidemics seems to lie in having skeleton dispensary establishments in readiness to be called out should the need arise," and arrangements are now being made to provide these.

Plague in India.

The most recent plague statement for the whole of India shows 229 deaths against 299 seizures. The provincial figures were: Bombay Presidency and Sind, 54 deaths; Madras, 33; Bengal, 2; Bihar and Orissa, 4; the United Provinces, 4; the Punjab, 1; Burma, 54; the Central Provinces, 1; Mysore State, 48; Hyderabad State, 28.

The 219 passengers by the P. and O. mail steamer *Nankin*, which arrived in Bombay about a month ago, are not likely to forget their experiences during a six weeks' voyage from home. The *Nankin* was at Port Said owing to plague cases on board. At Port Said the authorities removed the passengers in three groups to segregation camps and hospitals ashore. One group was sent to camp alongside the canal, another to an island near by, while a third was taken to an infectious fever hospital

The Inspector-General of Civil Hospitals in the Punjab in a report on plague for the year of 1918 makes an interesting statement that there is a distinct change in the attitude of the people towards antiplague measures. "They have come to understand," he says, "the causation and spread of the disease, and although persons are still to be found who are averse from the measures adopted, they are usually relics of bygone days who are too set in their beliefs to wish to imbibe fresh ideas." The truth appears to be that the indifference of the Indian masses to sanitary matters is too often exaggerated. Ignorance is largely responsible for indifference where it exists, and no better method could be adopted to instruct the people than by including elementary hygiene in the curricula of the schools. The present Director-General of the Indian Medical Services has declared in the Imperial Legislative Council that without education of the masses the best organised medical service in the world must work in vain. He added: "To remove ignorance the knowledge must be imparted through schools and colleges of India; this is essential. It is first necessary to educate the teachers. Unfortunately, too, in practically every country in the world the rulers themselves have never received any education on public health. They therefore find it difficult to believe even now in the absolute necessity of giving this instruction in every school throughout the land." The rulers of Great Britain have made considerable progress in the kind of education referred to during the past few years, and a corresponding advance may be hoped for among the rulers of India.

Infant Welfare in Lahore.

The Health Officer of Lahore has presented an important note and proposals with regard to infant welfare in Lahore.

He points out that what is wanted is an effective organisation to carry on the work under the supervision of a competent woman. His scheme is: 1. That a woman supervisor should be appointed who would devote the whole of her time to the work. 2. That there should be one infant welfare centre in each ward. To start with, four centres should be opened. 3. That these centres should be located at present in the Municipal Girls' School. 4. That magic lanterns, lectures, practical demonstrations in feeding, clothing, washing of babies (baby clinics), be held there once or twice a week by the lady health visitors. Free milk for the babies of the poor, and cheap medicines for the ordinary ailments of babies to be supplied at each centre. Prizes in the form of toys to be given at each demonstration to the best clothed, best fed babies, &c., by the supervisor. 5. That with a view to facilitate the supply of trained help at the time of childbirth to the poor the number of dais (native midwives) be increased from four to eight, and the number of municipal midwives reduced to one. 6. That four women, one attached to each centre, be appointed at present for home visitations, help in baby clinics, distribution of medicine, milk, &c. They should possess the certificates of having passed the examination of first-aid, home nursing, and domestic hygiene of the St. John Ambulance Association. The difference between the existing and proposed monthly expenditure in staff would amount to about Rs. 1000 a year, whilst the work done would be doubled. The fees paid to the municipal midwife for the case attended and the cost of medicine and milk used at the "welfare centres" will be, of course, additional charges and will vary with circumstances. The public health subcommittee has recommended that the proposals made by the health officer be sanctioned.

The Commission on Afghan War Medical Arrangements.

Colonel Frank Johnson, who administered martial law so successfully at Lahore, Brigadier-General R. P. Ridgeway, and Colonel R. Heard, I.M.S., constituted the mission to the Frontier to report fully on the medical and general arrangements made for the troops. The British Service, the Indian Army, and the Indian Medical Service were represented in this inquiry, but not the Royal Army Medical Corps.

MEDICINE AND THE LAW.

Professional Secrecy and the Medical Officer of Health.

A CORRESPONDENT has asked our opinion in regard to two situations in which a medical officer of health may be placed, and in which public duty appears to conflict with the principle of professional secrecy. He asks: 1. What is the duty of a medical officer of health when his health visitor reports to him a case of incest? 2. When the health visitor hands on to him the statement made by a midwife that a woman in her district is carrying out abortions?

1. *In Regard to Alleged Sexual Crime.*

In reply to the first question, a medical officer of health has, we take it, no specific duties in relation to information, given him by his subordinates, of sexual crime or vice. But he will generally deem it his duty, on receipt of such information, to require a rigorous inspection of premises concerned, and a severe application of any sanitary regulations that appear infringed. The offence is closely associated, of course, with overcrowding. Whatever be the duty of a medical man who, in the exercise of his calling, becomes aware of the commission of a crime which his peculiar position and knowledge enables him to detect, it cannot be said that a medical man has any special obligation cast upon him, if, in the course of his avocation, he hears from another person of the alleged commission of some form of sexual crime or vice. And this statement is no less true when, as in the present case, the informant is an official subordinate. For the detection of sexual crime or vice is no part of the duty of a health visitor or medical officer of health. If, however, the medical officer of health is satisfied that the information given him is substantially founded, and if, for example, a minor is victimised, common humanity and regard for society will lead him, either personally or through his informant, to set suitable machinery in motion. If, however, the case is one in which adults alone are concerned (a brother and sister, for example, or a father and adult daughter) the case for further interference is still weaker and the medical officer of health will do well to remember that the occasion is certainly not a privileged one, and that action on erroneous information would expose him to serious risk at law.

2. *In Regard to Alleged Abortion-mongering.*

In regard to information received that abortion is being practised by an individual, the medical officer of health as such has definite duties and obligations in respect of persons who are practising midwifery; and if the alleged abortionist is ostensibly or secretly practising midwifery, it is the duty of the medical officer of health to satisfy himself as to her conduct and methods, and, if necessary, to communicate in the proper way with the Central Midwives Board. If the alleged abortionist is not openly or supposedly practising midwifery it would seem advisable that the medical officer of health make some inquiry of the midwife who alleges "abortion-mongering." Should the information obtained from the midwife appear to have any relation to cases of sickness or death in the district, the medical officer of health has then reason to pursue his investigations and to communicate with the registrar of deaths, or perhaps the coroner. It does not, however, appear to be his duty, legally, officially, or otherwise, to communicate to the police the mere fact that he is informed that abortions are being procured by a certain person, and he is not likely himself to obtain evidence justifying such action. The medical officer of health, however, who, without such evidence, communicates with the police may find himself exposed to grave inconvenience; and the police have no grounds whatsoever for calling in question the discretion or action of the medical officer of health who does not repeat to the police something he has heard, albeit in an official capacity.

Correspondence.

"Audi alteram partem."

THE MEDICAL SERVICE AT ST. PAUL'S.

To the Editor of THE LANCET.

SIR,—Will you allow me to call the attention of your readers to the advertisement on another page of the special service to be held in St. Paul's Cathedral at 7 P.M. on Tuesday, Oct. 21st, with the Lord Bishop of London as the preacher? All medical men and students are invited and the Medical Guild of St. Luke, which was founded in 1864, desire that the attendance at this thanksgiving service should be worthy of our profession.

I am, Sir, yours faithfully,

GEORGE COWELL,
Provost.

Sept. 29th, 1919.

NURSE ANÆSTHETISTS.

To the Editor of THE LANCET.

SIR,—In reference to your leading article last week on "Nurse Anæsthetists," it is evident that during the war the shortage of medical men made it incumbent on trained nurse anæsthetists to take the part of the medical men who were themselves specially trained in this department. It was a justifiable step in the circumstances, and right well, no doubt, did these new anæsthetists carry out their duties. But the danger now lies in perpetuating this system. It has its dangers, and they are reviewed in your leading article. It seems that one of the claims of the trained nurse anæsthetist lies in the 35,000 cases of nitrous-oxide-oxygen anæsthesia without a single fatality. Against this we have the well-known fact—not sufficiently emphasised—that though nitrous-oxide-oxygen anæsthesia is one of the most difficult to administer it is, at the same time, the safest, and though a higher mortality would be eloquent of our present argument it would also be surprising enough. The question of a midwife administering the anæsthetic (invariably chloroform) during obstetrical operations is another point, and one that can be dismissed in a few words: it is, as everyone knows, the easiest anæsthetic to administer, as well as the safest in the circumstances, in view of the cardiac hypertrophy that accompanies the gravid uterus.

However, nothing is of such great importance for the success of the anæsthetic as the preliminary examination of

the patient and the choice of the anæsthetic to be given to suit the case. It would be no exaggeration to state that the question at issue becomes here a highly important as well as a *personal* matter, where the physical consideration of the patient is made in conjunction with the self-conscious capabilities of the anæsthetist. To train a nurse properly, therefore, to act as an anæsthetist, she should be trained as well in the mysteries of inspection, palpation, percussion, and auscultation. It is also to be kept in mind that the trained nurse anæsthetist's claims are chiefly, if not solely, based upon her proficiency among soldiers—men who are essentially picked lives and whose experiences on active service have only added to the initial excitability of the anæsthetic without having much effect upon its dangers.

The legal aspect of fatal cases must not be forgotten, and, finally, it is comparatively easy to administer an anæsthetic to 1000 patients without a fatality occurring, but it is a different thing to administer it to 10,000 with the same result.

I am, Sir, yours faithfully,

Tunbridge Wells, Sept. 27th, 1919. W. E. REYNOLDS, M.D.

IONISATION FOR SEPSIS.

To the Editor of THE LANCET.

SIR,—In your issue of Sept. 20th there appears an interesting paper by Captain F. W. Baker Young on the treatment by ionisation of patients suffering from cellulitis and from septic wounds. To those who, like myself, believe that this method of treatment is the most practical one of sterilising wounds by extraneous agents available for ordinary work, anything that is written on the subject and any work recorded is of interest. I am sure that Captain Young, as he continues to practise this method and to perfect his technique, will be more and more pleased with his results.

From his account of his clinical work I believe his success in cases of cellulitis and its effects are due to two things—(*a*) the solvent action of anions—e.g., chlorine on exudates and recently formed adhesions and (*b*) to the nutritional changes which the exchange of ions between tissue cells and the fluids of the body in apposition with them produces. To sterilise an open and accessible wound directly and within a few minutes I believe he will find it necessary to use an ion, such as zinc, which produces a coagulative effect on albuminous substances.

The sterilisation which Captain Young found to occur in his lucidly described experiments I suggest is to be explained by the facts that as most small bodies—e.g., bacteria—are negatively charged they move towards the positive electrode; and that in the immediate neighbourhood of the electrode, when this is formed of a substance with which the ions of the solution do not form a compound, a secondary action takes place when the current is passing, resulting in products inimical to bacterial life. Thus, supposing the electrode to consist of carbon and the solution to be common salt in water, the *ion* chlorine will, when it reaches the carbon, give up its charge of electricity and become an *atom* of chlorine. This immediately attacks the water and seizes the hydrogen, forming hydrochloric acid, while oxygen is set free. This change, of course, does not occur in the wounds which Captain Young treated, as the tissues of the body intervened between the solution and the metal of the positive electrode. The benefit which so many of Captain Young's patients experienced after electrical treatment is an encouragement to others to adopt ionisation. I have been for some years interested in the subject, and have been struck on reading articles by various men at the almost unanimous record of satisfactory results reported.

I am, Sir, yours faithfully,

Devonshire-place, W., Sept. 24th, 1919. A. R. FRIEL.

NEW RATES OF PAY FOR TEMPORARY COMMISSIONS, R.A.M.C.

To the Editor of THE LANCET.

SIR,—Be careful, pray, not to accuse the Government A.M.S. Advisory and Treasury Departments of generosity in pay, even on present offer of six months' contract. And for why? Are these foreign service officers going to use the rupee, the piastre, the franc, or the mark? If the piastre, this remains constant to par, but everything in Egypt is fabulously dear *in piastres:* in other words, the £1 sterling goes only a very little way. If the rupee, which = 2*s.* nominal at present, and there one understands it is fixed pro tem. —1*s.* 4*d.* : 2*s.* : : 16 : 24 = 800 : 1200—which alone neutralises any good pay and more than does so, 1*s.* 4*d.* being the pre-war par value. If the franc or the mark is to be used the officer is in clover, the former being, say, only worth 6½*d.* and the latter 2*d.*

It seems probable, then, that the newly engaged (or renewed officers) will go to India or Ceylon, the homes of the rupee. It is advised that they should get a signed and witnessed contract that the sterling rate of pay should be stabilised to their satisfaction according to the country in which they may be called upon to serve before they buy or refresh their uniform. We have all "had some" of the Government generosity.

I am, Sir, yours faithfully,

G. L. K. FINLAY, B.A. Cantab., M.B., C.M. Edin.,

Sept. 21st, 1919. Late Temporary Officer, R.A.M.C. (2 wars).

SURGICAL USES OF A HAIRPIN.

To the Editor of THE LANCET.

SIR,—It is the practice of some to wear braces which can be used as tourniquets; an American surgeon employs the tubes of discarded tyres for lung exercise: others shave and operate with the same instrument; and there was once a doctor who gave an enema with a stethoscope. The hairpin, too, has sterner uses. In the last few years I have repeatedly been in places where it was necessary to perform those ophthalmic operations which are a part of general surgery—enucleation, for example, and paracentesis, and where a real eyelid retractor was not available I found that an excellent substitute can be made from a stiff hairpin. The middle part of each limb of the pin is bent to form one of the valves which catches the eyelid. This makeshift stood the test even of a stormy occasion in a foreign convent when I was obliged to open with a scalpel the hypopyon of a nervous patient, and though my retractor disturbed the orthodoxy of a mother superior, it certainly was a means of saving the eye.

In a lesser extremity, when a syringe has failed to dislodge a foreign body from the ear, and when chance has supplied a speculum, the loop of a fine hairpin (always, of course, under visual control), curved and passed like a hand over the foreign body, will often withdraw it. I have once found the thing useful in an urgent predicament when obliged to perform tracheotomy on an infant with a knife only. A hairpin was bent so that the middle thirds of its two limbs projected into the tracheal wound and kept it open, while the looped and open ends respectively were fitted to the circumference of the neck and gave attachment to tapes. This device served until I was able to procure a tube.

I am, Sir, yours faithfully,

ARNOLD K. HENRY, M.B., F.R.C.S.,
Late Consulting Surgeon, 5th Sector, 17th Region, Armée Française.

Dublin.

A CLUB FOR DEAFENED EX-SERVICE MEN.

To the Editor of THE LANCET.

SIR,—A committee of the members of the Ebury Bridge Lip Reading Classes for deafened ex-N.C.O.'s and men of both Services venture to ask your kind assistance in making known their proposal to form a club for the benefit of those who have lost or partially lost their hearing in the great war. The idea of the proposed club is to promote the social welfare of a very considerable body of deserving men, when they will have an opportunity of indulging in sports, games, and other recreations according to their individual tastes without the embarrassments which they would be inclined to feel when mixing with others who enjoy their faculties unimpaired.

In course of time we hope to extend the club's sphere of influence and further the material interests of those who find their affliction a great handicap in the struggle of life. As things are at present there must be among your readers many ex-Service men who, while not attending the lip-reading classes, would doubtless be interested in the matter, and it is with this object, Sir, we crave the courtesy of a little of your space so that they may communicate with us.

We are, Sir, yours faithfully,

V. H. C. EDWARDS, R.A.S.C., } Hon. Secs.
E. C. MOON, R.E., } pro tem.

Westminster Evening Institute, Ebury Bridge, Victoria, S.W., Sept. 17th, 1919.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING AUGUST, 1919.

In the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 4·9 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·5, 4·7, and 5·9 per 1000. No case of any of these diseases was notified during the month in the City of London. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Kensington, the City of Westminster, St. Marylebone, Hampstead, Holborn, and Wandsworth; and the highest in Hackney, Bethnal Green, Stepney, Southwark, Bermondsey, and Greenwich. The prevalence of scarlet fever was 25 per cent. less than in the preceding month; this disease was proportionally most prevalent in Bethnal Green, Stepney, Southwark, Bermondsey, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1409 scarlet fever patients at the end of the month, against 1066, 1132, and 1516 at the end of the three preceding months; the weekly admissions averaged 184, against 150, 157, and 236 in the three preceding months. Diphtheria was somewhat less prevalent than in the preceding month; the greatest prevalence of this disease was recorded in Stoke Newington, Hackney, Bethnal Green, Stepney, Poplar, and Southwark. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1086, 1021, and 1108 at the end of the three preceding months, numbered 1001 at the end of August; the weekly admissions averaged 125, against 145, 138, and 153 in the three preceding months. The prevalence of enteric fever was about equal to that in the preceding month; of the 31 cases notified during the month, 9 belonged to Greenwich, 4 to Hackney, 3 to Poplar, and 2 to St. Pancras. There were 43 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 19, 25, and 34 at the end of the three preceding months; the weekly admissions averaged 7, against 3, 5, and 5 in the three preceding months. Erysipelas was proportionally most prevalent in Hammersmith, Bethnal Green, Stepney, Southwark, Bermondsey, and Woolwich. The 33 cases of puerperal fever notified during the month included 5 in Islington, 4 in Hackney, 3 in Poplar, 3 in Southwark, and 2 each in Paddington, Fulham, and Wandsworth. Of the 15 cases of cerebro-spinal meningitis, 2 belonged to Kensington, 2 to Chelsea, and 2 to Lambeth; while of the 12 cases of poliomyelitis 2 belonged to Hackney.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the four weeks ended August 30th the deaths of 3072 London residents were registered, equal to an annual rate of 9·9 per 1000; in the three preceding months the rates had been 11·1, 9·7, and 9·8 per 1000. The death-rates ranged in August from 4·8 in the City of London, 7·0 in Woolwich, 7·7 in Stoke Newington, 7·7 in Lewisham, and 8·3 in Wandsworth, to 11·2 in St. Marylebone, 11·5 in Finsbury, 11·5 in Poplar, 11·7 in St. Pancras, 13·7 in Holborn, and 14·1 in Shoreditch. The 3072 deaths from all causes included 179 which were referred to the principal infectious diseases; of these, 29 resulted from measles, 2 from scarlet fever, 31 from diphtheria, 10 from whooping-cough, 4 from enteric fever, and 103 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, Finsbury, Lewisham, and Woolwich; and the highest in Kensington, Hackney, Bethnal Green, Stepney, Poplar, and Greenwich. The 29 deaths from measles were 35 less than the average number in the corresponding period of the five preceding years; of these deaths 5 belonged to St. Pancras, 4 to Camberwell, 3 to Bethnal Green, 3 to Stepney, and 3 to Southwark. The 2 fatal cases of scarlet fever exceeded the average by 9. The 31 deaths from diphtheria were 2 above the average; of these deaths 7 belonged to Hackney, 5 to Bethnal Green, 4 to Lambeth, 2 to Stepney, 2 to Poplar, and 2 to Southwark. The 10 fatal cases of whooping-cough were one-quarter of the average number; of these, 2 each belonged to Islington, Hackney, and Greenwich. The 4 deaths from enteric fever were 5 less than the average; of these deaths 2 belonged to Camberwell. The 103 deaths from diarrhœa and enteritis among children under 2 years of age were less than a third of the average number; the greatest proportional mortality from this disease was recorded in Paddington, Kensington, Hammersmith, Stepney, Poplar, and Bermondsey. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during August was 64 per cent. below the average.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING AUGUST, 1919.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,026,901**	—	**728**	**499**	—	**31**	**2**	**33**	**203**	**15**	**12**	**1523**	**4·9**	—	**29**	**2**	**31**	**10**	**4**	**103**	**179**	**0·6**	**3072**	**9·9**
West Districts:																								
Paddington	122,507	—	6	16	—	1	—	2	3	1	1	30	3·2	—	—	—	—	—	—	7	7	0·7	93	10·4
Kensington	151,535	—	7	11	—	—	—	1	4	2	—	25	2·2	—	—	—	—	1	—	12	13	1·1	123	10·6
Hammersmith	114,962	—	4	11	—	—	—	—	14	—	1	30	3·4	—	—	—	—	—	—	5	5	0·6	81	9·2
Fulham	145,186	—	16	17	—	—	—	2	6	1	—	42	3·8	—	—	—	1	—	—	2	3	0·3	101	9·1
Chelsea	57,368	—	9	4	—	1	—	1	—	2	—	17	3·9	—	—	—	1	—	—	1	2	0·5	39	8·9
City of Westminster	122,046	—	7	3	—	1	—	1	—	1	—	13	1·4	—	1	—	—	—	—	—	1	0·1	89	9·5
North Districts:																								
St. Marylebone	92,796	—	12	5	—	—	—	1	4	—	—	22	3·1	—	2	—	—	—	—	3	5	0·7	80	11·2
Hampstead	75,649	—	7	3	—	1	—	—	2	—	1	14	2·4	—	1	—	—	—	—	1	2	0·3	57	9·8
St. Pancras	186,600	—	25	20	—	2	—	1	8	1	1	58	4·1	—	5	—	1	—	—	3	9	0·6	168	11·7
Islington	297,102	—	50	35	—	1	—	5	17	—	—	108	4·7	—	—	—	1	2	—	3	6	0·3	229	10·1
Stoke Newington	47,426	—	4	9	—	—	—	—	2	—	—	15	4·1	—	—	—	1	—	—	1	2	0·5	28	7·7
Hackney	196,598	—	40	34	—	4	1	4	7	1	2	93	6·2	—	—	—	7	2	1	8	18	1·2	150	9·9
Central Districts:																								
Holborn	35,303	—	1	1	—	1	—	—	1	—	—	4	1·5	—	—	—	—	—	—	1	1	0·4	37	13·7
Finsbury	68,011	—	14	10	—	—	—	1	1	—	—	26	5·0	—	—	—	—	—	—	1	1	0·2	60	11·5
City of London	16,138	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	4·8
East Districts:																								
Shoreditch	89,675	—	12	10	—	1	—	—	5	1	—	29	4·1	—	—	—	1	—	—	3	4	0·6	97	14·1
Bethnal Green	107,362	—	31	36	—	1	—	1	15	—	—	84	10·2	—	3	—	5	—	—	3	11	1·3	82	10·0
Stepney	232,010	—	99	56	—	1	—	1	22	1	1	181	10·2	—	3	—	2	—	—	12	17	1·0	180	10·1
Poplar	143,443	—	27	24	—	3	—	3	4	—	—	61	5·5	—	1	1	2	1	—	8	13	1·2	127	11·5
South Districts:																								
Southwark	167,936	—	55	28	—	1	—	3	29	1	—	117	9·1	—	3	1	2	—	—	4	10	0·8	135	10·5
Bermondsey	107,635	—	30	9	—	—	—	—	11	—	—	50	6·1	—	1	—	—	—	—	5	6	0·7	82	9·9
Lambeth	272,038	—	55	27	—	1	—	—	10	2	1	96	4·6	—	—	—	4	—	—	3	7	0·3	224	10·7
Battersea	150,023	—	24	12	—	—	—	—	5	—	1	42	3·6	—	—	—	1	1	—	2	4	0·3	101	8·8
Wandsworth	300,787	—	41	21	—	—	—	2	7	—	1	72	3·1	—	1	—	1	1	—	4	7	0·3	191	8·3
Camberwell	239,461	—	38	33	—	—	—	1	10	—	1	83	4·5	—	4	—	1	—	2	5	12	0·7	184	10·0
Deptford	103,527	—	34	7	—	1	—	1	—	—	—	43	5·4	—	2	—	—	—	—	2	4	0·5	86	10·8
Greenwich	90,440	—	26	11	—	9	1	—	4	1	1	53	7·6	—	2	—	—	2	—	3	7	1·0	71	10·2
Lewisham	161,405	—	37	25	—	—	—	1	2	—	—	65	5·3	—	—	—	—	—	—	1	1	0·1	95	7·7
Woolwich	131,942	—	17	21	—	1	—	1	10	—	—	50	4·9	—	—	—	—	—	1	—	1	0·1	71	7·0
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The opening meeting of the session will be held to-day, Friday, Oct. 3rd, at the West London Hospital, at 8.30 P.M., when Dr. Herbert Chambers will be inducted president, and the Keetley Memorial Medal will be presented to the retiring president, Lieutenant-Colonel E. M. Wilson, R.A.M.C. The presidential address will follow on "London Medical Societies: a Glimpse of their History and Work."

THE LATE DR. DAVID GARDNER.—Dr. Gardner, who died at the Royal Alexandra Infirmary on Sept. 22nd, aged 61, was a well-known medical practitioner in Paisley, where he had been in practice for the past 30 years. He was a student at Glasgow University, where he gained the William Hunter Medal for Medicine and Public Health, and he was for a time surgeon-superintendent in the service of the Queensland Government.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. F. E. Gunter retires on retired pay.

Major R. J. Franklin to be acting Lieutenant-Colonel whilst commanding a Medical Unit.

N. G. Cooper, late Major, Canadian A.M.C., to be temporary Major.

Capt. A. M. McCutcheon and Temp. Capts. H. Goodman and J. N. Humphrey relinquish the acting rank of Major.

Capt. J. E. Hepper to be acting Major whilst specially employed.

Temp. Capt. R. T. Cox to be Captain.

R. Svensson, late temporary Captain, to be temporary Captain.

Capt. E. Percival relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

To be Lieutenants and to be temporary Captains: Capts. E. Parker and W. S. Gross, from Special Reserve; Temp. Capt. C. P. Chambers.

H. J. Theriault, late Captain, C.A.M.C., to be temporary Captain.

W. E. Shipsey to be Temporary Lieutenant.

A. H. Chu to be Temporary Hon. Lieutenant.

Officers relinquishing their commissions:—Temp. Hon. Lieut.-Col. R. G. Gows (retains the honorary rank of Lieutenant-Colonel); Temp. Major and Bt. Lieut.-Col. L. E. Lanyon-Owen (retains the Bt. rank of Lieutenant-Colonel); Temp. Capt. C. H. Fennell (granted the rank of Major).

Temporary Captains retaining the rank of Captain: J. W. Tonks, P. V. Early, C. T. I. Clarke, D. D. Ritchie, J. M. Anderson, L. W. Davies, E. J. Dermott, J. C. O'Farrell, R. P. Weldon, H. Harvey, W. A. Cardwell, C. J. D. Bergin, C. E. Wilson, A. N. Haworth, H. A. Forrester, H. P. Rogers, G. H. L. Fitzwilliams, G. W. Bissett, D. L. G. Radford, C. W. Morrison, J. G. Cronyn, J. M. Elliot, T. D. Webster, N. M. Grace, G. S. Goodwin, J. N. Humphrey, W. Shanks, J. M. Scott, B. M. Smith, C. E. Dukes.

Temp. Hon. Capt. W. S. Rutherford retains the honorary rank of Captain.

Temp. Lieut. R. A. MacArthur retains the rank of Lieutenant.

SPECIAL RESERVE OF OFFICERS.

Capt. B. M. Tuke relinquishes his commission and retains the rank of Captain.

Capt. J. P. Huban relinquishes his commission.

Lieutenants to be Captains: F. K. MacMillion, W. H. Duff, A. K. I. Jones, N. B. Peacock, W. Napier, A. S. Goudie, J. W. Mackay, J. B. Potter, W. Scotland, D. Finlayson, A. M. Davidson.

TERRITORIAL FORCE.

Capts. (acting Majors) N. J. Wigram and T. W. Hancock, O.B.E., relinquish the acting rank of Major on ceasing to be specially employed.

Capt. F. W. Squair to be acting Major whilst specially employed.

1st London General Hospital: Capt. (Bt. Major) (acting Major) R. C. Elmslie relinquishes the acting rank of Major on ceasing to be specially employed.

2nd London General Hospital: Major C. J. Symonds is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

4th Northern General Hospital: Capt. (acting Major) G. J. R. Lowe relinquishes the acting rank of Major on ceasing to be specially employed.

2nd London Sanitary Company: Capt. (Bt. Major) G. W. Ellis is restored to the establishment.

ROYAL AIR FORCE.

Medical Branch.—Capt. T. B. Mulvany relinquishes his commission and is permitted to retain his rank.

EAST AFRICAN MEDICAL APPOINTMENTS.

The Secretary of State for the Colonies announces vacancies for posts of Medical Officers in the following Protectorates: East Africa Protectorate, Uganda, German East Africa, Nyasaland, Zanzibar, Somaliland. The salary of a Medical Officer is on the scale of £400–£20–£500 a year, with duty allowance of £40, and after six years' service £525–£25–£600 a year, with duty allowance of £50. Temporary war bonus is paid at present, the annual amount corresponding to a salary of £400, being £55 to single officers and £105 to married officers. The grading of the senior posts in East Africa, which are filled by the promotion of Medical Officers, may be judged from the following arrangements in the East Africa Protectorate: Senior Medical Officer at £600–£25–£750, duty allowance £60; Deputy Principal Medical Officer, or Senior Sanitary Officer, £750–£25–£850, with duty allowance £75; Principal Medical Officer, £850–£50–£1000, duty allowance £85. Certain special appointments are graded as follows: Bacteriologist, as a Senior Medical Officer, Assistant Bacteriologist, as a Medical Officer, higher scale; Medical Officers of Health, as Medical Officers; in Zanzibar the Medical Officer of Health is equivalent to a Medical Officer, higher scale, with additional special allowance of £100 a year, and the Assistant Medical Officer of Health as an ordinary Medical Officer, with additional special allowance of £50 a year. The Principal Medical Officer in Nyasaland is graded as a Deputy Principal Medical Officer. The Principal Medical Officer in Zanzibar is graded as a Senior Medical Officer. The Head of the Medical Department in Somaliland is graded as a Senior Medical Officer. Quarters are provided free of rent, but not of rates or similar outgoings, or an allowance is given in lieu.

Leave is granted with full pay at the rate of two and a half days or three days, according to the officer's station, in respect of each month of service, and an equal period of return leave if the officer returns to the Protectorate. A free first-class passage is allowed on first appointment and on leave. All appointments are pensionable, but the scales of pension are at present under consideration. Medical Officers are permitted to retire after nine years' service with a gratuity of £1000, or after 12 years' service with a gratuity of £1250: this gratuity is in lieu of pension. Medical Officers are permitted to take private practice on the understanding that they give precedence to their official duties. Intending candidates should write to the Private Secretary for Appointments, Colonial Office, S.W. 1, for forms of application. Testimonials and other documents should not be sent in until the candidate has received a form of application from the Colonial Office.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Oct. 7th.

SURGERY: SUB-SECTION OF ORTHOPÆDICS (Hon. Secretaries—A. S. Blundell Bankart, R. C. Elmslie): at 5 P.M.

Cases:

Mr. Laming Evans: Coxa Vara after Reduction of Congenital Dislocation of the Hip.

Mr. P. B. Roth: Congenital and Paralytic Scoliosis.

Mr. Elmslie: Infantilism.

Cases will also be shown by Mr. Fairbank and others.

Thursday, Oct. 9th.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—J. S. Fairbairn, Herbert Williamson): at 7.45 P.M.

Specimens:

Dr. F. J. McCann: (1) Omental Hydatid; (2) Cystic Fibromyoma of the Pelvic Connective Tissue; (3) Fibroma of the Urethra causing Prolapse of the Anterior Urethral Wall.

Short Communication:

Dr. Gordon Ley: Traumatic Rupture of the Uterus.

Paper:

Dr. F. J. McCann: The Precancerous Uterus.

NEUROLOGY (Hon. Secretaries—P. W. Saunders, George Riddoch): at 8.45 P.M.

Presidential Address:

Dr. W. Aldren Turner: The Influence of Psychogenic Factors in Nervous Disorders.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, Oct. 6th.—4.30 P.M., Lecture XIX.:—Ætiology and Pathology of Gall Stones and their Complications.

FRIDAY.—4.30 P.M., Lecture XX.:—Symptoms, Complications and Treatment of Gall Stones.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Room of the Institute, 37, Russell-square, W.C.

Course of Instruction for Candidates as Tuberculosis Officers, General Practitioners and others. Bacteriological Demonstrations will be given in the Laboratories of the Institute, and visits arranged to Sanatoriums, Tuberculosis Dispensaries, &c.

THURSDAY, Oct. 9th.—5 P.M., Lecture I.:—Dr. H. Sutherland: The Early Diagnosis of Tuberculosis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Oct. 7th.—4.30 P.M., Lecture:—Mr. W. Thorburn Prostatic Enlargement.

Appointments

COFFIN, S. W. (late Capt. R.A.M.C.), has been appointed Assistant Anæsthetist at Guy's Hospital.

DUGGAN, M., M.R.C.S., L.R.C.P., Medical Superintendent of the John Leigh Memorial Hospital for Officers, Altrincham.

OATES, G. E., M.D. Lond., Medical Officer of Health for Bethnal Green.

RICHARDS, OWEN, F.R.C.S., M.Ch., Director of the Egyptian Government School of Medicine and Kasr-el-Aini Hospital, Cairo.

SARGENT, P., F.R.C.S., Consulting Surgeon to the Royal Hospital and Home for Incurables, Putney.

Vacancies.

For further information refer to the advertisement columns.

Bedford County Hospital.—Res. M.O. £150.

Belgrave Hospital for Children, Clapham-road, S.W.—H.P. and H.S. £100 and £75.

Birkenhead Borough Hospital.—Jun. H.S. £170.

Bradford Royal Infirmary.—Two H.S.'s. £200.

Brighton, Royal Sussex County Hospital.—Asst. Path. £200.

Cancer Hospital, Free, Fulham-road, London, S.W.—Asst. S.

Carlisle, Cumberland and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £300.

Colchester, Severalls Mental Hospital.—Temp. Asst. M.O. 7 gs. per wk.

Croydon General Hospital.—Jun. H.S.

Derby, Derbyshire County Council.—Maternity and Child Welfare M.O. £450

Derby, Derbyshire Education Committee.—Sch. M.O. £450.

Dorchester, Dorset County Council Education Committee.—School Dentists. £400.

Downpatrick, Down District Asylum.—Asst. M.O. £250.

Frimley, Brompton Hospital Sanatorium.—Med. Supt. £600.

German East Africa Occupied Territory.—M.O.'s. £400–£20–£500.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. S.

Great Northern Central Hospital, Holloway, N.—Dental S. Also H.S. £150.

Hereford County and City Mental Hospital.—Senior Asst. M.O. £350.

Home Office, Reformatory and Industrial Schools Department.—Medical Inspector. £500.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—S. H.P. for six months. 30 gs. Asst. Res. M.O. £150. Asst. P. £250. Asst. in Dept. of Path. £250. Part-time Asst. in Dept. of Path. £250.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £200. Also Asst. Cas. M.O., H.S., and H.P. All £50.
Hospital for Women, Soho-square, W.—Phys. Con. Also Hon. M.O.
Hull Royal Infirmary.—Sen. H.S. £200.
King's College Hospital, Denmark Hill, London, S.E.—Hon. Clin. Assts. for Dental Department. Also Junior S., Senior Orthopædist, Junior P., and Junior Neurologist.
London Homœopathic Hospital, Great Ormond-street, and Queen-square, W.C.—Res. M.O. £80.
London Lock Hospital and Rescue Home, 283, Harrow-road, W., and 91, Dean-street, W.—Hon. S. to Out-patients.
Maidstone, West Kent General Hospital.—H.P. £200. Also Second Hon. Anæsthetist.
Manchester, Ancoats Hospital.—H.S. £100.
Manchester Royal Infirmary, Central Branch, Roby-street, Manchester.—Res. Surg. O. £200.
Manor House Orthopædic Hospital, North End-road, Hampstead, N.W.—Res. S.O. £500.
Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—Asst. S. Also Clin. Assts.
Mount Vernon Hospital for Consumption and Diseases of the Chest, Northwood, Middlesex.—Asst. Res. M.O. £200.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Radiologist.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.
Norwich Poor-law Institution Children's Homes.—Res. M.O. £350.
Nottingham General Hospital.—H.S. £150.
Oldham County Borough.—Asst. M.O.H. £390.
Oldham Royal Infirmary.—Third H.S. £200.
Paddington Green Children's Hospital, London, W.—H.P. and H.S. £150 each.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Poplar Hospital for Accidents, Poplar, E.—Jun. Res. M.O. £120.
Preston, County Asylum, Whittingham, Lancs.—Asst. M.O. £250.
Preston County Borough.—Tuberc. O. and Asst. M.O.H. £550.
Royal Chest Hospital, City-road, E.C.—Asst. P.
Royal London Ophthalmic Hospital, City-road, E.C.—Senior H.S. £150.
Ryde, Royal Isle of Wight County Hospital.—Res. M.O. £250.
St. George in the-East Infirmary, Raine-street, Old Gravel Lane, London, E.—Asst. M.O. £350.
St. Marylebone General Dispensary, 77, Welbeck-street, Cavendish-square, W.—Res. M.O. £150.
Scotland Region, Ministry of Pensions.—Medical Referees.
Sheffield City Education Committee.—Sch. Dent. S's. £400.
South London Hospital for Women, South Side, Clapham Common, S.W.—Female Asst. S. and Temp. Asst. S.
Stroud General Hospital.—H.S. £200.
Sunderland Royal Infirmary.—Sen. H.S., Two Jun. H.S.'s. and H.P. £250 and £200 respectively.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—In-patient P. and Two Out-patient P.'s.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.
Willesden Urban District Council.—Two Dentists. £400.
Wolverhampton and Staffordshire General Hospital.—Res. M.O. £200. H.S. £200.

Births, Marriages, and Deaths

BIRTHS.

DRAKE-BROCKMAN.—On Sept. 26th, at Studland House, Worthing, the wife of Ralph E. Drake-Brockman, D.S.O. (late Lieutenant-Colonel, R.A.M.C.), of a son.

MARRIAGES.

BARNARDO—LLOYD.—On Sept. 24th, in London, Dr. Barnardo, of Southport, to Frances Mabel, elder daughter of the late Charles Rees Lloyd, of Berkeley, California, U.S.A.

DEATHS.

CLARKE.—On Sept. 22nd, at Charing Cross Hospital, George Fernandez Mitchell Clarke, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A., aged 46.
VERDON.—On Sept. 21st, at Charlotte-street, Hull, John Verdon, late Staff-Surgeon, Royal Navy.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Communications, Letters, &c., to the Editor have been received from—

B.—Board of Agriculture and Fisheries, Lond.
C.—Colonial Office, Secretary of State, Private Secretary to, Lond.; Miss G. Cowlin, Lond.; *Canadian Medical Quarterly*, Toronto.
E.—Mr. V. H. C. Edwards, Lond.; Rev. E. H. Enys, Brighton.
F.—Mr. J. G. French, Lond.; Dr. G. L. K. Finlay, Lond.; Dr. C. Flandin, Paris; Dr. A. R. Friel, Lond.; Food Education Society, Lond., Hon. Sec. of; Col. N. Falchnie, A.D.M.S.
G.—Dr. A. D. Gardner, Broxbourne.
H.—Mr. S. Hastings, Lond.; Dr. H. Head, Lond.; Dr. A. Harden, Lond.
J.—Dr. W. Johnson, Lond.
L.—Miss E. C. Lewis, M.B., Lond.; Messrs. Lawson and Co. (Bristol), Ltd.
M.—Medical Women's Federation, Lond., Sec. of; Mr. G. Mayall, Bolton; Dr. J. McIntosh, Lond.
P.—Dr. J. J. Perkins, Lond.; Mr. R. E. C. de Pury, Paris.
R.—Dr. J. Regnault, Toulon; Dr. H. Rainsford, Lond.
S.—Society for the Prevention and Relief of Cancer, Lond., Hon. Sec. of; Dr. W. C. Sullivan, Lond.; Dr. J. W. Stanforth, Hinderwell; Dr. E. G. Stanley, Paris.
T.—Dr. A. H. Thompson, Lond.; Dr. D. Turner, Edinburgh.
W.—Dr. C. Watson, Edinburgh; Westminster Evening Institute, Lond.; Dr. W. J. Wilson, Belfast; Mr. L. Wasserman, St. Albans; Messrs. Watson and Sons, Lond.; Dr. F. Wetterwald, Paris.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Medical News.

UNIVERSITY OF ST. ANDREWS.—In the Third Professional Examination for Degrees of M.B., Ch.B., the following candidates passed in the subject indicated:—

Materia Medica.—Isabella Dron Kilgour, Nona Smith Leslie Katharine Duff Macfarlane, Gracie MacGregor McKorie, Elizabeth Wills MacVicar, and William Lofley Tullis.

LECTURES ON THE HISTOLOGY OF THE NERVOUS SYSTEM.—Ten public lectures on "The Histology of the Nervous System," with demonstrations, by Dr. C. D. Da Fano (Captain, Italian R.A.M.C.), will be given at King's College, Strand, London, W.C., on Tuesdays, at 4.30 P.M., beginning on Oct. 7th. These lectures are free to all students of King's College and to students of other London colleges and medical schools.

THE OPENING OF THE WINTER SESSION.—The annual dinners in connexion with the opening session at the various London medical schools were not held during the week on account of the railway strike, notice to this effect having been given in the daily press. At St. Mary's Hospital the presentation of prizes by Sir John Goodwin took place on Oct. 1st.—The introductory address by Sir John Bland-Sutton and the distribution of prizes by Sir Robert Hill to students of the Middlesex Hospital Medical School, fixed for 3 P.M. on Wednesday, Oct. 1st, was postponed.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The following scholarships have been awarded:—Entrance Scholarship in Arts (value £100): F. A. Bevan, Merchant Taylors' School. Jeaffreson Exhibition (value £50): R. N. Curnow, Devonport High School, and H. F. Hiscocks, Highgate School (equal). Senior Entrance Scholarship in Science (value £75): J. N. Kerr, University College, Cardiff. Junior Entrance Scholarship in Science (value £100): E. J. Blackaby and A. B. Cooper (equal).

THE LONDON MEDICAL EXHIBITION.—The ninth of these exhibitions, which have been in abeyance during the war, is arranged to be opened at the Central Hall, Westminster, on Monday next, Oct. 6th, and will remain open until Friday, Oct. 10th, from 12 noon to 7 P.M. each day. Admission to the exhibition is limited to members of the medical profession, to all of whom resident within 50 miles of London invitation cards have been issued. Medical men from a distance can obtain admission cards from the Secretary, 194–200, Bishopsgate, London, E.C. 2, or at the hall itself during the exhibition week.

THE ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—The next award of the prize, amounting to about $250, will be made on July 14th, 1920, if an essay is submitted worthy of the prize. Essays intended for competition may be upon any subject in medicine not previously published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, to be received by the Secretary of the College (19, South 22nd Street, Philadelphia, Pa., U.S.A.) on or before May 1st, 1920. The successful essay will remain in possession of the College. No award was made for 1919.

BOOKS, ETC., RECEIVED.

CANTON PRESS, London.
Motionism, or the World's True Religion. By E. J. McCarthy Morris, F.R.C.S.E. Pp. 130. 5s.

GRIFFIN, CHARLES, AND CO., London.
Practical Sanitation. By G. Reid, M.D., D.P.H. 19th ed. Pp. 367. 7s. 6d.

HEFFER, W., AND SONS, Cambridge.
Some Questions of Phonetic Theory (Chapter V.): The Perception of Sound. By W. Perrett. Pp. 40. 2s.

HEINEMANN, WILLIAM, London.
Naval Hygiene. By J. C. Pryor, M.D., Medical Inspector, U.S. Navy. Pp. 508. 12s. 6d.

LIPPINCOTT (J. B.) COMPANY, London and Philadelphia.
Atlas of Operative Gynæcology. By B. C. Hirst, M.D. Pp. 292. 30s.
Internal Medicine. For the Practising Physician on Diagnosis and Treatment, with a complete Desk Index. By N. B. Potter, M.D., and J. C. Wilson, M.D. 5th ed. Vols. I. and II.: Medical Diagnosis. Pp. 658 and 843. Vol. III.: Treatment. By Prof. N. Ortner. Pp. 666. Index, pp. 166. Price complete, £3 15s.

LONGMANS, GREEN, AND CO., London, New York, Bombay, Calcutta, and Madras.
The Simple Carbohydrates and the Glucosides. By E. F. Armstrong, D.Sc. 3rd ed.

RICHARDS, GRANT, London.
Human Life and How It May be Prolonged to 120 Years. By Brevet-Lieut.-Colonel F. F. MacCabe, attached R.A.M.C. Pp. 296. 6s.

UNIVERSITY OF LONDON PRESS, London.
Shell Shock. By André Léri, Professor to the Faculty of Paris. Edited by Sir John Collie, M.D., C.M.G. Pp. 249. 7s. 6d.

Notes, Short Comments, and Answers to Correspondents.

THE AERIAL COMBATANT:

HIS PSYCHOLOGY AND NERVOUS PHYSIOLOGY CONSIDERED IN THE LIGHT OF ATHLETIC ANALOGIES.

BY THE LATE H. G. F. SPURRELL, M.A., M.B., B.CH. OXF.,
CAPTAIN, R.A.M.C.

PART II.

WHEN a man who wishes to become an aerial combatant has overcome the difficulties of learning to fly he has accomplished one-fourth of his task. But before he can be regarded as a flying combatant he must surmount, secondly, the difficulties of using the weapons of aerial warfare—he must, in fact, learn to fight in the air; thirdly, he must attain the highest skill for which he has the inherent capacity in aerial tactics and strategy; and fourthly, he must learn the relation of aerial fighting to the other military activities of an army.

Difficulties in the Selection of Flying Men.

It is extremely desirable, and also extremely difficult, to recognise the kind of nervous system which offers the best return for education, that is, to choose a man who will make a good flyer, a good fighter, and a good soldier. One can hardly expect that anything so complex will present itself in the form of a definite and easily recognisable type. Different individuals attain the same ends by widely different means. In the case of flying men it appears that one man will depend for equilibration mainly on labyrinthine stimuli, another on visual, and a third on muscular, and yet all three fly well. Experience has shown that the very stable, imperturbable type and the high-strung neurotic type may both excel or both fail through the defects of their qualities. Among recruits for the flying army, given general soundness and a certain level of intelligence, one can only with confidence reject a very few as altogether unsuitable for training. One may pick out some individuals who strike one as showing particular promise, and one may reject a few as never likely to reach a sufficiently high standard; but with the majority one can, at present, only experiment. In a great many the deciding point will be the way in which they are handled by their instructors.

The first essential is what we call intelligence. If a man is clearly stupid it is not worth while, for this reason apart from any others, to attempt to train him for an aerial combatant. Some men without being actually stupid are thick-headed, but if the time can be spared to compensate for their deficient mentality, they may develop remarkably quick and accurate reflexes. On the other hand, there is the recognised philosophic type who cannot outgrow a tendency to think before he acts even when his reflexes are educated. Of the over, as of the under, cerebral type, one does not like to speak dogmatically. Even if he does not become a very effective fighter himself, he may originate novelties in tactics which will be applied with startling results by quicker men.

In a learner, the association centres of whose brain are adequate in dealing with new ideas and capable of educating his reflex centres accordingly, it is equally necessary that the reflex mechanism should be capable of education. Assuming general soundness and the efficiency of the reflex apparatus, much information may be gained as to special suitability by studying the candidate's athletic record. Time is an important element. A man who has learned to fence fairly well during the past few months has shown that he can train his reflexes quickly and late in life; whilst no such evidence is given by the man who rides exceptionally well, but almost from infancy has lived among horses. Further information on the value of the athletic record in selecting candidates for the Air Force should prove very interesting.

The Effect of Past Injuries.

Another important point is the history of past injuries. The effect of a pupil's past injuries on his capacity for education, and the effect of a trained man's injuries on his prospects of resuming full duties, should be considered apart. In an unselected sequence of pupils and pilots discarded as "permanently unfit for the duties of a flying officer in any capacity," a history of past injury to the head will be found one of the most frequent antecedents. On the other hand, such a grave history has been found in some of the best fighting pilots that recovery from prolonged unconsciousness following a bad crash has been suggested as evidence of high powers of recuperation. The whole subject appears to be one of compensation, and further knowledge on these points is greatly needed. Unfortunately, the results of accidents involving head injuries are usually stated in the terms of the surgeon, not the neurologist. Adequate statistics are required of the whole number of men who are rendered unconscious by crashes and the proportion of these who recover completely. The opinion seems to be gaining ground that it is not advisable to attempt training men who have a history of head injuries followed by a prolonged period of unconsciousness.

The difference between impairment of the nervous system in men who have yet to learn to fly and men to whom fighting in the air has become second nature is very great. I once remarked to a very skilful flyer, "I suppose you could fly your machine when you were drunk, if you were not too drunk?" and he promptly replied, "I have." However, I do not believe that an aerial combatant can afford the handicap of cerebral impairment in fighting. In the case of a man who even does no more than drink the fine edge off his wits each night, one can only look for steady deterioration.

Psychological Phenomena.

So far I have been endeavouring to map out the physiological accommodation of the nervous system to the needs of flying, but this cannot be done adequately without reference to those phenomena which in the present state of our knowledge we have to call psychological. The career of an aerial fighting man is not infrequently brought to an end by loss of confidence. Part of the equipment of a normal man is a complex of deep-seated ideas. One of the most important is the idea that no harm will ever come to *him*: confidence in his own safety. Another is the idea that no evil is to be apprehended in the life with which he is familiar: confidence in his own environment. A third is the conviction that life is worth living: a confidence in the general order of things. Not one of these is logically unassailable, but for the purposes of the species they must dominate the individual or its life would not go on. But it is impossible to forecast the suggestion any particular experience may leave. A man who survives being torpedoed at sea may have his faith in his individual immunity rudely shaken; he may only be unable ever to feel safe on a ship again, or he may even be fortified by the experience: "Anything may happen, but I never come to any harm." Closely associated with suggestion in relation to a sense of personal security is the whole cult of charms, amulets, and mascots.

The bearing of all this upon the psychology of flying is surely obvious enough. It is absolutely essential that a pupil bring to his first experience of flying these sanguine instincts in a robust state. It is then extremely important that nothing should be done to weaken them. It is not unusual for an observer to tell me that he is so fed up with being crashed by pilots that he is determined either to give up flying or to keep the safety of his life in his own hands by becoming a pilot himself; he does not as a rule make the best type of pilot. Observers, as a rule, make sound, steady flyers, but are apt to be over-cautious; brilliant and daring flying is more to be expected from the youngsters who start fresh, so full of confidence that they need a few "crashes" to sober them down. But it is very important to guard against the development of a positive fear: a fear of height, of crashing, of wind, of a first solo, or even a fear of ridicule.

Loss of Confidence.

The final problem I shall touch upon here is loss of confidence in aerial combatants who have seen service. This may be a sequel to physical injuries, but it is a thing distinct in itself, and the two conditions should be considered separately. Since learning to fight in the air is a separate thing from learning to fly, and the education for the former follows upon the latter, it is not to be expected that a loss of confidence will necessarily embrace both. One neurasthenic officer, with a fine record, but worn out by stress of service, came and told me that at last his nerve was completely gone. He had been attacked in the air by two machines, and instead of engaging them he had turned tail and fled home. He asked for a rest from warfare, but begged to be given a flying job as ferry pilot or instructor or at testing machines. His fighting nerve was shaken; his flying nerve was unimpaired. In another case an officer who crashed in a fight told me that he recovered his nerve completely and resumed fighting, crashed again, not in a fight, and since then, though he could contemplate aerial fighting with complete confidence, he was nervous about flying. Here the flying nerve was shaken apart from the fighting nerve.

It is noticeable that in most of these cases it is an accident, sufficiently severe to cause grave bodily injuries but leaving the nervous system functionally competent, that has a damaging effect on the stability of the protective instincts of security. In this connexion the history of the prize-ring will repay study. Many of the greatest pugilists have never

suffered a defeat till late in their career. But it appears that when a man's success is due largely to a belief in his own invincibility he never recovers completely from the moral effect of being knocked out at the end of a hard fight. An exception occurs to me in the case of an unbeaten amateur who was knocked out for the first time, accidentally, by the professional who trained him, just before his first public contest. To his friends and backers it seemed a most unfortunate occurrence; but the man won his fight a few days later in spite of receiving a good deal of punishment in the earlier stages. The essential point here seems to be that the misfortune at the hands of his instructor was in no way associated in the man's mind with defeat.

The Novelty of Flying.

Flying is still so recent an accomplishment that few flyers are young enough not to remember the general surprise and excitement at the discovery that it was possible at all. Then came a period when aviation accidents were so frequent that it was hotly debated whether aeroplanes could ever be made safe enough to serve any practical purpose. Last of all came the war, when the exigencies of aerial warfare introduced fresh dangers into flying just as the defects of the older machines were being overcome. Hence the fundamental note in flying is novelty. Even the pilot under present conditions is often flying his own machine within a few weeks of the first time he has ever been taken off the ground. And flying is still, even for the most hardened pilot, associated with danger. Pilots, as a rule, hate flying as passengers; their confidence is in themselves, not in the air. Education may suggest safety, but this is a recent suggestion, and the counter suggestion of a bad crash can easily upset it. When a new generation has grown up with the idea of flying, has been carried from infancy in aeroplanes as the present one has been in railway trains, and has ceased to distinguish death or injury in a crash from death or injury from any other cause, then possibly loss of confidence in the air may be much harder to induce than it is now, while we are still in a stage of transition.

Conclusion.

I am afraid that I cannot frame any very definite conclusions as the result of this discursive survey of the nervous physiology and psychology of the flying combatant. The fact which seems to me to stand out clearest is that, as man has been able to adapt himself to flying by reason of his nervous versatility, it is unreasonable to expect that all individuals will overcome the difficulties of flight in the same way. Consequently very different types will prove successful by utilising their peculiar advantages, and the treatment of those who fail in the air will have to be individual, not routine, and will therefore offer from day to day widely differing problems to medicine. Only by systematic study will the necessary knowledge be gained which will lessen the constant drain upon the personnel of the Royal Air Force, at present being caused by nervous breakdown.

THE LIFE OF A BACILLUS.

IN a paper communicated to the Académie des Sciences J. Danysz describes a series of experiments, undertaken with a strain of paratyphoid bacilli isolated in 1891, with a view to ascertain the viability of the microbe under different conditions. In broth contained in sealed ampoules maintained at ordinary temperature the bacillus retained all its biochemical properties and its virulence for a period of 12 years, whereas if kept in an incubator at 37°–38° C., these were retained only for one to two years. On the other hand, if the ampoules were closed with a pledget of cotton-wool and placed in an apparatus compensating the loss of water without renewing the broth, the same bacillus died within three months. In connexion with the latter experiment, Danysz found that during the first 48 hours the broth first becomes acid and then strongly alkaline. This is due to the transformation of the sugars present in the broth into lactic and carbonic acids, followed by the transformation of the peptones and proteins into amino-acids, and finally into ammonia. At the same time, two distinct strains of the bacillus are formed: the one, aerobic, growing on the surface of the broth; and the other, anaerobic, existing at the bottom of the test-tube. He assumes that the increasing alkalinity of the broth is responsible for the inhibition of growth and for the death of the bacillus. On reinoculating the culture of the bacillus from one test-tube into another every 24 hours, he found that the bacillus retains all its biological and biochemical properties for at least five years. At the beginning nine generations are produced within 24 hours, whereupon the rate of multiplication increases, so that at the end of 12 months nine generations are produced within 12 hours; this represents on an average 5000 generations per annum, or 25,000 generations in five years.

However, Danysz draws attention to the fact that in the case of unicellular organisms which multiply by successive scissions it is impossible to distinguish between the individual and the species. In the case of pluricellular organisms, the individual plant or animal is produced, grows, and on death disappears as a unit. With unicellular organisms which multiply by scission into two individuals it is impossible to retain these distinctions. The original microbe, by scission, gives rise to two microbes, these in turn yield four; we have apparently three generations, but in reality this is not the case, as we have no dead bodies and the four bacilli representing the third generation embody the substance of all the individuals of the preceding generations. Consequently, a microbe must be regarded as being a body endowed with the property of continuous and unlimited growth, of which the single units, retaining limited dimensions, become independent of each other. It follows that all unicellular organisms which multiply by scission are endowed with an infinite lease of life, if placed in suitable conditions of nutrition.

THE AROMA OF FISH FRYING.

The Rye justices have held that the aroma of fish frying is a nuisance, and a demobilised soldier, who had set up a business at this Cinque Port, has been served with an order for its abatement. The justices were loth to place any impediment in the way of an ex-Service man's return to civil and business life, but whatever the calling may be they held that there must be no infringement of the Public Health Act. The evidence against the business—at least as it had been carried on—was overwhelming. The corporation received a petition from the inhabitants in the vicinage of the premises; witnesses complained of sleeplessness and even illness necessitating medical advice in consequence of the aroma, which was described as "abominable"; and the medical evidence showed that even in the house next door to the fried-fish shop everything was pervaded with the smell. Defendant told the justices he was willing to take further steps to prevent any complaints, thus admitting that however well fitted his shop was there was still something left undone that ought to have been done originally, and the justices gave him time to comply with the order.

REPORTS OF INQUESTS IN CASES OF SUICIDE.

A CORRESPONDENT has called our attention to an inquest upon a woman who took her own life by jumping in front of a train, and to the details published in a report of the inquest. These describe the deceased as having suffered from nervous breakdown and neurasthenia, and extracts are printed from a letter left by her in which she dwelt with morbid religious introspection upon the supposed sinfulness of her past life. Our correspondent deprecates the publication of such details and particularly the use of medical terms, such as neurasthenia, as likely to lead persons affected, or believing themselves to be affected, with the disease named to apply the case of suicide to themselves, and to follow the evil example thus brought to their notice by the public press. We discussed this subject in a leading article[1] recently in connexion with a proposal made by a London coroner that inquests on cases of suicide should be held in camera. To this course we were disinclined to give support on public grounds, but we conceded that the publication of details, such as those which draw attention to an easy method of suicide, might have a dangerous and even fatal influence upon some occasions. We also referred to the undesirable publication of scandalous details in those cases where they are, necessarily or unnecessarily, brought out in the coroner's court. We should not regard it as desirable to omit altogether from published details of the evidence at an inquest matters strictly relevant to the cause of death, such as medical testimony and that of other witnesses which establishes the case as one in which some person is to blame. It is, however a matter of discretion for those conducting newspapers to publish or to withhold details of this kind. Much that appears with regard to inquests appears to be inserted on account of its "dramatic" interest—that is to say, it is printed with a view to titillating the imagination of a public which gloats over anything in the nature of a "tragedy of real life." Into this category would fall distressing letters written by persons broken down by distress, real or morbidly imagined, and it should be realised that such letters are more likely to prove suggestive to readers who are, or who fancy themselves to be, similarly situated. A medical term may also have a sinister influence in connexion with suicide through a morbidly-minded reader of a report applying it to himself, and we are fully in accord with the principle that the unrestricted use of medical terms in the lay press is undesirable. They are apt to be misapplied or misunderstood, and their use may result in a tendency to drive morbidly-minded persons into the snare of the quack.

[1] THE LANCET, August 9th, p. 255.